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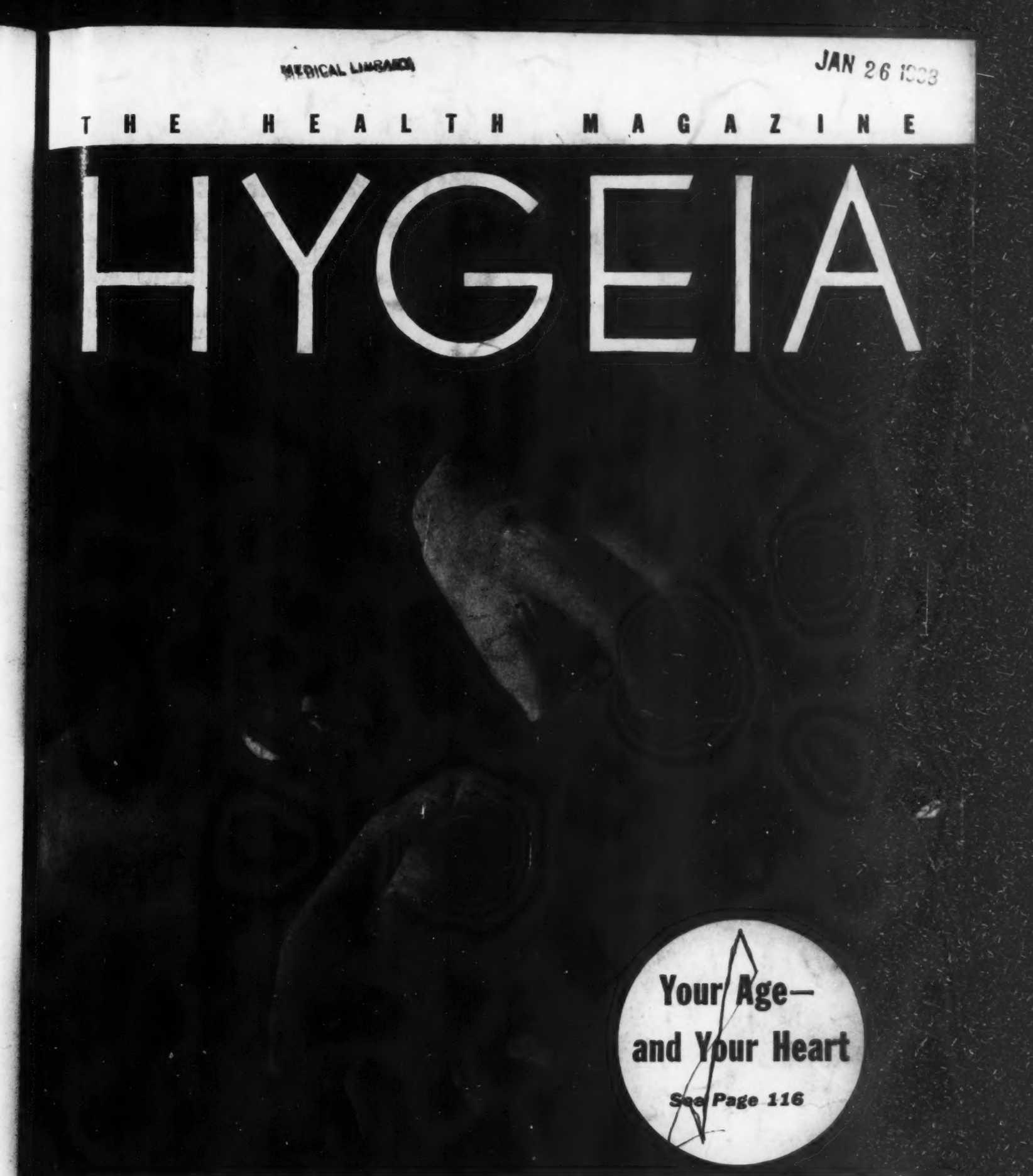
THE HEALTH MAGAZINE

HYGEIA



Your Age—and Your Heart

See Page 116

DO YOU SNORE? • OUTWITTING ARTHRITIS
"I'M NOT AFRAID OF CANCER" • YOUR SKIN

AN AMERICAN MEDICAL ASSOCIATION PUBLICATION

WIFE BEATS H.C.L. AS WHOLE FAMILY CHEERS

DISCOVERS NUTRITIOUS MEALS THAT PLEASE PURSE AND FAMILY ALIKE

SALMON WITH EGG SAUCE

1 1-lb. can Salmon
1½ tablespoons butter
1½ tablespoons flour
1 cup evaporated milk
¾ teaspoon salt
⅛ teaspoon pepper
2 hard cooked eggs, chopped
1 teaspoon chopped parsley

Put salmon as it comes from can into small pan; cover and heat thoroughly. Melt butter in a sauce pan; add flour; stir until well blended; add milk and bring slowly to boiling, stirring constantly. Put salmon on a hot serving platter. Add hot liquor from salmon to white sauce, blending well. Add salt, pepper, hard cooked eggs and parsley. Heat thoroughly and pour over salmon. Makes 4 large servings.

DEVILED SALMON

1 1-lb. can Salmon
2 hard cooked eggs
3 tablespoons butter
3 tablespoons flour
1¼ cups milk
½ teaspoon salt
¼ teasp. Worcestershire Sauce
⅛ teaspoon pepper
½ cup chopped celery
¼ cup fine cracker crumbs

Chop celery; mince salmon; cut eggs in cubes; mix all together. Melt 2 tablespoons butter in sauce pan; add flour; stir until well blended; add milk and bring slowly to boiling, stirring constantly. Take from fire and add salmon mixture, salt, pepper and Worcestershire Sauce. Place in shells, buttered ramekins or flat baking dish; cover top with cracker crumbs; dot with remaining tablespoon of butter and bake in hot oven (475°F) about 15 minutes, until delicately browned. Serves 6.

SALMON A LA KING

3 tablespoons butter
6 tablespoons flour
½ cup sliced green pepper
2 slices onion
1 tablespoon lemon juice
1 teaspoon salt
2 sage leaves
3 cups milk
1 1-lb. can Salmon

Flake salmon. Melt butter in saucepan; add green peppers and onions; cook about 3 minutes until tender. Add flour, stir until well blended; add milk and bring slowly to boiling, stirring constantly. Take from fire, add lemon juice, salt, sage and flaked salmon. Reheat thoroughly and serve on buttered toast, or in patty shells. Serves 6.

CANCO tested

THERE'S A *Modern Miracle* IN THIS CAN

In far away Alaska and in the Pacific northwest, rugged, hardy fishermen bring to shore catches of delicious salmon just taken from clear, icy water. These large, meaty fish are rushed to nearby canneries and with surprising speed are sealed in cans while their cold, ocean freshness is at its peak. Next, they are cooked scientifically *in the sealed cans,* so that all of the delectable flavor and goodness are locked in . . . ready for you to open and serve any day in the year, even thousands of miles away. Isn't that a modern miracle?

Nutritional research has discovered that this delicious, canned salmon is rich in iodine, vitamin D and the pellagra-preventive factor. It is a good source of protein and food energy. It is also a good source of essential minerals such as iron, calcium and phosphorous.

And that isn't all the good news. With the deliciousness and remarkable nutritive qualities, canned salmon is also amazingly economical. Ask your grocer for several cans today. It comes in short cans as well as tall ones. Serve it often.

ACCEPTED AMERICAN MEDICAL ASSOCIATION

This Seal of Acceptance denotes that the statements in this advertisement are acceptable to the Council on Foods of the American Medical Association.

AMERICAN CAN COMPANY

Home Economics Department CANCO *230 Park Avenue, New York City*

DIPHTHERIA Is Easier and Cheaper To Prevent Than to Cure

Diphtheria can be cured only by your doctor's giving antitoxin. But frequently the disease starts so quickly that you may not suspect your child has it, so that you may call the doctor too late for the antitoxin to cure the disease.

But you can protect your child against coming down with diphtheria by having your physician give immunizing treatment. This will guard your child against diphtheria. Diphtheria is easier and cheaper to prevent than to cure.

BABIES SUPERVISED BY PHYSICIANS ARE BETTER BABIES

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This space is devoted to the interest of better babies by
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FEBRUARY 1938 Vol. 16 No. 2

HYGEIA

THE HEALTH MAGAZINE

Published and copyrighted, 1938, by the American Medical Association. Edited by Morris Fishbein, M.D.

PRESENTING

THURMAN B. RICE, M.D., professor of bacteriology and public health, Indiana University School of Medicine, and chief of the bureau of health and physical education, Indiana State Board of Health. Dr. Rice has contributed many articles to HYGEIA, among them a series on sex education.

BILLIE LOUISE CROOK, M.Ed., whose work as supervisor of physical therapy for the crippled children's division, State Department of Education, Texas, has helped her to help others in outwitting arthritis.

REGINALD FITZ, M.D., Wade professor of medicine, Boston University School of Medicine, who brings an encouraging message for the diabetic.

JOSEPH JASTROW, PH.D., lecturer and writer on popular psychology, among whose well known books are "Keeping Mentally Fit," "Effective Thinking," "Wish and Wisdom" and "Sanity First."

CONRAD BERENS, M.D., who contributes the fourth article in a series on vision and light. His paper, "Eyes in Industry," was aided by a grant from the Ophthalmological Foundation, Inc.

CONTENTS FOR FEBRUARY

COVER DESIGN ..... Ewing Galloway

FRONTISPIECE 104

FOURTH OF JULY ACCIDENTS—An Editorial 105

OUTWITTING ARTHRITIS ..... Billie Louise Crook 106

FORECAST FOR MARCH 108

X-RAYS ..... Walter E. Burton 109

MODERN MEDICAL CHARLATANS: II ..... Morris Fishbein 113

YOUR AGE AND YOUR HEART ..... Louis Faugeres Bishop Jr. 116

THIS LITTLE PIG ..... David O. Woodbury 120

THE CHOICE OF A MARRIAGE MATE ..... Thurman B. Rice 122

EYES IN INDUSTRY ..... Conrad Berens 125

DIABETES ..... Reginald Fitz 129

YOUR SKIN 132

"OPEN WIDE" ..... Harriet Fitzgerald 136

"I'M NOT AFRAID OF CANCER!" 139

THE STORY OF HUMAN ENERGIES: I ..... Joseph Jastrow 141

SKIING: II ..... Charles C. Lund 145

DO YOU SNORE? ..... Margaret McEachern 148

OLD DOGS AND NEW TRICKS ..... Leona Baumgartner 150

OLD TEASER BECOMES A JOINER ..... Philip Jared 153

RADIO ANNOUNCEMENTS 160

SCHOOL AND HEALTH 163

QUESTIONS AND ANSWERS 169

BOOK REVIEWS 170

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RARELY A DAY OFF FROM SCHOOL

Everyone says, "They're just too healthy for words"

THESE healthy, peppy youngsters get plenty of wholesome food and exercise . . . plenty of good fresh air and sunshine so that they can tackle their work at school with enthusiasm . . . and show a good attendance record. One way that helps keep them buoyantly healthy is an ample Vitamin reserve. When there is reason to suspect that Vitamins A and D deficiency may exist, wise parents know that their children need some additional source of these Vitamins, such as I. V. C. HALIBUT LIVER OIL.

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You can buy I. V. C. Halibut Liver Oil in liquid or in easy-to-take capsule form. Three drops of the liquid give you as many Vitamins A as 1½ teaspoonsful of cod liver oil (U.S.P. Minimum Standard), and one tiny capsule is equal to 4½ teaspoonsful of cod liver oil in Vitamin A content (U.S.P. Minimum Standard).

If your physician advises an *extra supply* of Vitamin D, ask for I. V. C. Halibut Liver Oil with Vitamin D Concentrate, which is sold either in dropper bottles or convenient capsule form.

Ask for I. V. C. Vitamin products by name at your drug store . . . and be sure the package carries the I. V. C. trademark and the name of the makers, International Vitamin Corporation, 50 East 42nd Street, New York City.

I.V.C. Halibut Liver Oil Plain and Halibut Liver Oil with Vitamin D Concentrate, both in liquid and capsule form, are accepted by the Council on Pharmacy and Chemistry of the American Medical Association. So you can be sure they are safe for you and your children.

INTERNATIONAL VITAMIN CORP.

50 EAST 42ND STREET, NEW YORK CITY

THE HOUSE OF VITAMINS I.V.C

WINTER IS NATURE'S NIGHT. SHE BLANKETS THE WORLD WITH LEAVES. THEN SHE SPREADS A SOFT WHITE COVERLET AND RESTS IN A COLD, CLEAN PEACE UNTIL SHE IS AROUSED BY THE BLARE OF MARCH WINDS.

EDITORIAL

FOURTH OF JULY ACCIDENTS

THE JULY 1937 issue of HYGEIA carried an editorial with the opening sentence, "The world does not long remember its tragedies." How true this is has been again illustrated by the long list of the maimed and dead from the 1937 celebration of Independence Day. Fireworks and firearms took a toll of twenty lives, sixteen eyes, thirty-seven hands, fingers or other members, and other injuries reaching the staggeringly unnecessary total of 7,205.

These data were compiled by the American Medical Association from questionnaires returned by hospitals from all over the country. High as these figures are, they represent only a part of the terrific cost. Additional unreported accidents treated by physicians in their offices or first aid stations must be numbered in the thousands.

Six of the twenty deaths in 1937 occurred at Nampa, Idaho, when a shelf of fireworks in a drug store exploded, causing many serious injuries in addition to the deaths. Seven children died from burns caused by fireworks. Gunshots were responsible for the death of four boys. Two men drowned after their boat had been wrecked by an exploding firecracker. A toy cannon explosion killed a man. Many Southern states celebrate Christmas rather than the Fourth of July with fireworks. On Dec. 24, 1936, at Asheville, N. C., a forerunner of the Nampa tragedy took place when a fireworks display accidentally set off in a store resulted in several deaths and many serious injuries.

In 1903 over 400 deaths from fireworks were recorded, a large percentage of which were due to tetanus, or lockjaw. The 1937 statistics show only two known patients with lockjaw, and both recovered. But this is not good enough. The small number is due not so much to lack of opportunity for tetanus to occur as to the splendid cooperation of physicians, police, hospitals and first aid units in giving tetanus antitoxin immediately following an injury. The toll is much too high in such tragedies as are revealed in the 1937 hospital records: the little girls who died from burns when their clothing caught fire from the "harmless" sparklers they were holding; the fingers and hands of small boys blown off by firecrackers; the imbedded glass and tin from exploded bottles and tin cans under which crackers had been placed, and the loss of eyes, hands and, in one case in Concord, Mass., of life of parents who in their zeal to protect their youngsters fired the crackers and displays themselves.

An example of what can result from "homemade" fireworks was the tragedy that occurred at Jamaica, N. Y. Three high school students experimented with chemicals and a length of pipe, and in the resulting explosion one boy lost both hands and one eye, another lost one hand and the third received internal injuries.

Forward-minded communities have made commendable efforts to avert this yearly cost of life and mutilation. The sale of fireworks is prohibited by many large cities. But parents eager to provide the excitement of an "old-fashioned Fourth" for their youngsters and themselves only too often have merely to drive to the city limits to buy explosives. A step in the right direction has been taken by a few states which now enjoy state legislation against the sale of fireworks. New Jersey is one of these and reports only 72 injuries, while Pennsylvania, with only slightly more than twice the population and without such a state law, had 991 injuries. However, such lone states also encounter the unrestricted sale of fireworks beyond their limits. Thus the majority of the New Jersey accidents occurred near the state line, where "bootlegging" of fireworks over the Pennsylvania-New Jersey border was common.

From 1903 to 1916 the American Medical Association presented annual summaries of injuries resulting from the celebration of the Fourth of July. In 1937 a new series was initiated in the face of an again rising tide of fireworks accidents. It was formerly declared that "the responsibility clearly rests with city governments." Today the automobile has extended this responsibility to the states. The city of Chicago prohibits the sale of fireworks; yet enough were brought in to injure 225 persons, in Chicago alone, sufficiently severely to require hospital treatment.

Public consciousness needs further awakening to this needless yearly toll of death and injury. Civic groups, schools, newspapers and other organs for distributing information should start now to promote a safer Fourth of July celebration in 1938.

State legislatures should be informed of the facts and the most effective means of combating the menace.

Prevention rather than correction is the watchword in combating arthritic deformities

"IF I HAD only known in time!" . . . "If I had known that this disease was going to cause this deformity, I might have been able to prevent some of it." . . . "No one told me what to expect, or perhaps I could have kept ahead of it." . . . "I did not know what to do until it was too late!" These are some of the hundreds of remarks that have been made by arthritic patients. Physicians look at these characteristic deformities caused by the crippling disease and wish that they could have had a chance to help prevent rather than to help correct the tragic results of arthritis. Those patients who have been helped to prevent deformity have made the best recovery.

When these people became aware that their muscles were growing weak, their joints could not easily bear being moved and the muscles and joints were becoming drawn, even though the pain was intense they persistently strove to keep the limbs in such positions of rest as to counteract the drawing or shortening of muscles. Most of all, they tried bravely to retain at least some slight degree of motion in all joints. It is generally conceded that some cases of arthritis are of such severity that apparently nothing can be done to alleviate the trouble. In many, however, help can be administered in time. These, then, are the people for whom this article is written.

Chronic arthritis is regarded by the medical profession as a systemic disease with joint manifestations. By that it is meant that the disease affects the entire body, but the most noticeable effects are found in the joints of the body. Although it is always realized that there is something physiologically wrong with the joints, it is often difficult to ascertain whether the difficulty is referable to infected tonsils or teeth, chronic infections of some of the internal organs, a disturbance of the glandular system of the body or a combination of such causes. Naturally, the cause of the trouble must be located and treated. Superior medical care is imperative; this includes of course attention to the functions of the muscles and the joints of the body.

The problem of finding the cause of the trouble should not so completely engross every one concerned with the case that the continuance of proper use of the muscles and joints receives inadequate attention. During the active stage of the disease, the pain and swelling are usually so intense that movement of the affected joints is virtually impossible. Extensive use of inflamed joints is also apt to result in a "flare up" of joint symptoms. These facts also account for a cessation of motion in the arthritic patient, which sometimes favors development of deformities.

These deformities are characteristic. Many persons who suffer from chronic arthritis have poor posture. Whether poor posture over a period of years has predisposed to arthritis or whether the poor posture has developed only after the onset of the disease is an interesting question. Whatever the answer may be, poor posture, or poor bodily mechanics, is an ever-present problem in the physical care of the arthritic person. As a rule, nearly all points of poor posture may be noted in the average patient. It is generally found that he walks, if he is able to walk at all, with a forward head, flat chest, round shoulders, incorrect pelvic tilt and flat or pronated feet. Carefully selected exercises faithfully carried out over a period of time may prove of great value in improv-

"It can be done!" This is the encouraging message offered by BILLIE LOUISE CROOK

ing this condition. In addition to faults of posture, there are often characteristic contractions of certain muscle groups with atrophy, or wasting away, of the opposing muscle groups. The condition, then, becomes one of muscular unbalance. This tends to be cumulative and, as time goes on, the stronger muscles overcome the weaker and a persistent contracture deformity results. These deformities are caused by disuse of the muscles surrounding the inflamed joints. During the active stage of the disease, the person is likely to lie very still. He avoids all motion that is unpleasant. He finds a comfortable position and keeps it. This position is often one of lying on the back with hands at rest, folded across the chest, and knees and hips somewhat flexed. After some time he becomes unable to resume a normal carriage and straighten the knees and hips; neither can he lift the arms and extend them straight overhead or even lift them straight out at the side. The hands may be deformed. It is frequently impossible to turn the hand over with the palm up or to straighten the hands at the knuckles or to flex the fingers without help. After the condition has progressed to this advanced stage, the person is almost too weak and crippled to help himself. There remain some things, however, that he can do to help himself. A corrective program should be planned and carried out under the supervision of specially trained persons.

The most simple procedures are often the most effective. The care of the arthritic patient is no exception to this rule. Obviously the earlier these procedures can be instituted and the more carefully and faithfully they are carried out, the more nearly perfect will be the return to normal. Certain facts stand out which help to determine the procedure to follow. The arthritic patient is debilitated or weakened. There is probably extreme pain when the weight of the body is borne on the joints, as in walking. The muscles of some groups are weak or atrophied while their opposing muscle groups are contracted. Yet the only way to build up muscle strength is to use the muscles actively. How can this be done?

If a body is placed in water, the weight of that body is reduced by the buoyancy of the water. If the patient is placed in water, the weight or the load on his limbs is greatly lessened. This relieves the pain caused by the weight of the body on the painful joints and allows the muscles to perform their work more easily. It also allows the person to assume many positions that he could not assume outside the water. Many wheel chair patients who cannot walk a step outside the water walk fairly correctly in the water. Warm water helps relax the muscular and nervous tension of the patient, which is an important step in the treatment of chronic arthritis. It also helps increase the circulation to the inflamed joints. Gentle massage given under warm water is an aid in increasing the blood flow to the affected members. Heat, massage, exercise and rest all judiciously administered have done much to help the patient who suffers from chronic arthritis.

Many cases of chronic arthritis respond favorably to an underwater muscle reeducation program. A general program may be suggested as follows, subject to the doctor's supervision:

The patient is submerged in a pool or specially constructed tub of warm water at about 98 or 99 F. Gentle massage by stroking and kneading motions is given above and below the

affected joints. In painful cases the massage must be exceptionally gentle indeed. If tendons are contracted after the acute stage has been passed, they may be gradually stretched with reverse stroking and traction. Following massage, a carefully prepared routine of exercises is given. These exercises may have to be given "assistive-actively" at first; that is, through motions carried out by the patient but aided gently by some one else. As soon as possible, however, the patient performs them with his own power. Eventually he is able to perform them against the resistance of the water or of weights or of some other person. Emphasis should be placed on the necessity of developing the atrophied or weak muscle groups. The strong or contracted muscles should not be exercised. Unfortunately, the movements which the patient finds are easy for him to perform are not the ones that he needs to perform. It is the difficult movement that he must learn to perform. In this connection he should be taught the desired movements slowly, steadily and with force through as great an arc of motion as possible; but he should let the return movement of the limb be a relaxed movement. After the exercises have been performed with help, the patient should practice the assumption of correct posture in sitting, standing and walking positions. He should practice movements needed in daily life, such as getting up out of a chair, going up and down stairs or dressing himself. Many such exercises involving the use of all the large muscle groups in the body can eventually be carried out successfully in water by even the weakest of arthritic patients. One should guard against overfatigue. Not only does this general procedure help the patient physically, but his mental attitude invariably becomes more confident and cheerful as he regains his physical fitness.

Too much emphasis cannot be placed on the fact that the earlier precautions are taken, the more rapid will be the recovery. The longer these deformities have been allowed to persist, the more difficult they are to correct.

We need to concentrate more on prevention than on correction. Arthritic sufferers should be encouraged to keep up the fight systematically to maintain normal function of affected joints and muscles and thus avoid a life marred by crippling deformities.

"Of all sad words of tongue or pen, the saddest are these—it might have been." It might have been—avoided. But how? Listen to the broadcast on Wednesday, February 2, which will be given by the American Medical Association and the National Broadcasting Company. (See page 161 for further information.)

Find out what causes arthritis, what you can do to avoid it, and what approved means of treatment are available in case you have it.

Use your wits—and outwit arthritis!

FORECAST FOR MARCH

Whether March comes in like a lion or like a lamb, it will find you better prepared if you have kept up with HYGEIA.

The March issue will bring valuable information on

Infections: an article in which *Lois M. Hall, R.N.*, tells what happened to Mary Jane when she neglected an infected finger. It might happen to you—unless you find out what to do and what not to do in such a case.

Parasite Tricks in Spreading Disease: a new series, in which *Dr. George A. Skinner* will deal with plant and animal parasites, the "tramps, loafers and sharpers of the biologic world," and their effects on man.

Heart Murmurs in Children: Are they always indicative of a serious condition? What is the difference between a functional and an organic murmur? Why is it important for parents to know about heart murmurs? Read *Dr. H. A. Slesinger's* article, and save yourself from possible needless worry—or possible tragic mistakes.

How to Blow Your Nose: There's a right and a wrong way to do most things, and even such an apparently simple procedure as blowing the nose is no exception, for among the results that may ensue from an improper way of blowing are such serious conditions as mastoiditis, abscesses of the ears and sinusitis. *Dr. Solomon Malis* tells of these dangers and how to avoid them.

X-RAYS

A WAY TO BETTER HEALTH THROUGH PHOTOGRAPHY

***WALTER E. BURTON** contributes the fourth article on the value of x-rays to public health and to the practice of medicine*

AN AUDIENCE composed largely of physicians sat in a Rochester, N. Y., theater recently and witnessed a medical pageant in which photographic film played the leading role. The purpose of the meeting was to demonstrate just how important photography has become in the art and science of saving and prolonging human life.

The dramas that unfolded on the motion picture screen may have lacked the dazzle of a modern Hollywood production, but from the standpoint of importance in the unending battle against disease, many of them merited far more than a four star rating.

One of the highlights of the program was the world première showing of a colored motion picture of blood circulation. This picture, made in the laboratories of the University of Rochester, is an example of the way natural color motion picture photography may be used in the study of body activity.

The film shows in lifelike color the circulation of blood in the mesentery, or intestinal membrane, of a rabbit. First the general system of vessels is seen. Then, step by step, the magnification is increased until the individual blood corpuscles, tumbling over each other like so many buttons rushing through branched pipes, can be observed. At one point during the filming, amyl nitrite was applied by inhalation to dilate the vessels, simulating the phenomenon of fainting. This resulted in a stopping and actual reversing of the circulation for a short time. The picture, although made primarily to demonstrate blood circulation, has suggested a number of avenues of investigation which may result eventually in valuable observations about blood and ailments involving it.

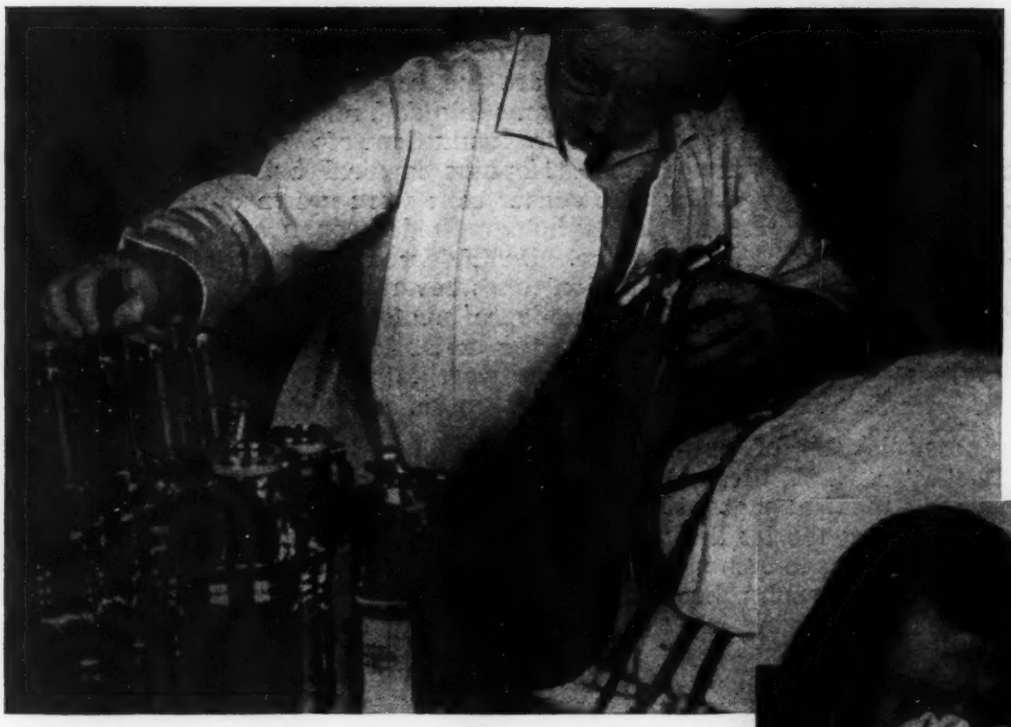
This motion picture was made with a movie camera coupled to a microscope using lenses highly corrected for color. The images of the blood cells as projected on the theater screen were approximately 100 million times the size of actual corpuscles.

Cancer cells that move and drink, and blood cells that devour bacteria and other harmful matter are the chief actors in a motion picture drama filmed under the auspices of the Carnegie Institution of Washington and the Johns Hopkins Medical School at Baltimore. The cancer cells were grown outside the body and photographed through a powerful microscope. On the screen they are seen about 400 million times normal size.

Time-lapse photography was employed in filming the actions of these cells; that is, the exposures were made at such intervals that, when the film is projected at normal speed,

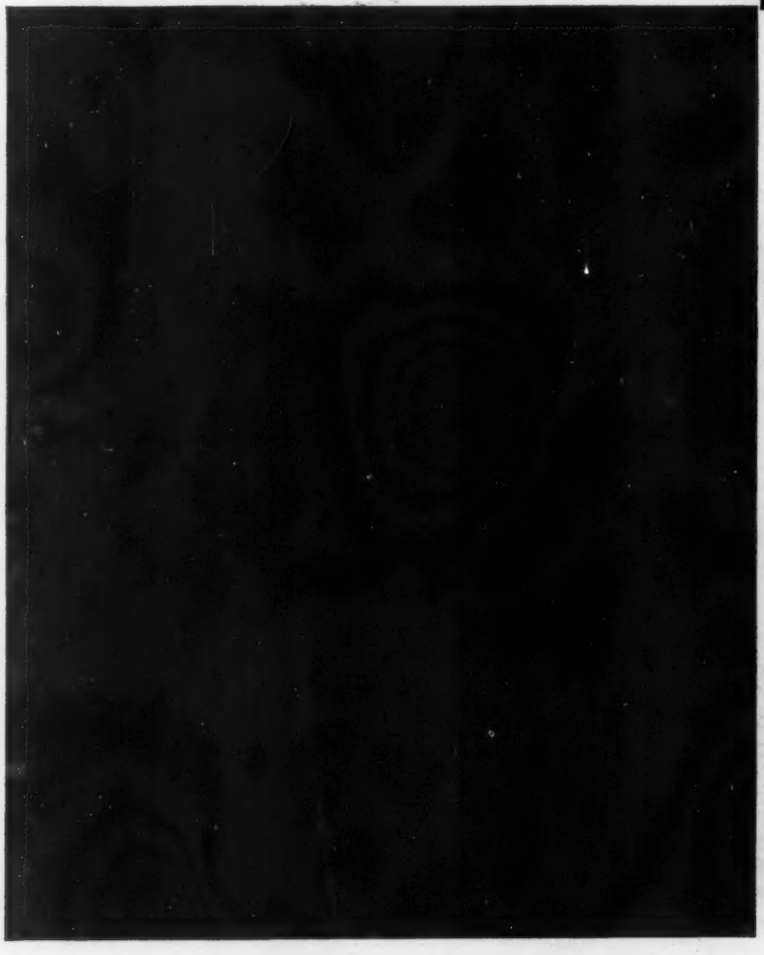
Medical Division, Eastman Kodak Company

AN EIGHTEEN YEAR OLD GIRL POSES FOR HER FULL LENGTH X-RAY PICTURE. RADIOGRAPHS OF THE ENTIRE HUMAN BODY, MADE ON ONE PIECE OF FILM, ARE FOR INSTRUCTION, NOT FOR DIAGNOSIS.



PHOTOGRAPHY ALSO BECOMES IMPORTANT IN RECORDING MEDICAL HISTORY. AT LEFT IS SHOWN A MODERN METHOD OF ADMINISTERING ANESTHESIA, AS CONTRASTED WITH THE FIRST ETHER ADMINISTRATION (REENACTED BELOW) BY WILLIAM THOMAS GREEN MORTON ON HIMSELF.

BELOW, THE CAMERA CATCHES BLOOD FLOWING INTO A CAPILLARY FROM AN ARTERY. THIS IS AN ENLARGEMENT FROM THE FIRST COLOR MOTION PICTURE FILM SHOWING BLOOD CIRCULATION (IN THE MESENTERY OF A RABBIT). INDIVIDUAL CORPUSCLES MAY EASILY BE SEEN.



BACTERIA AS THEY ARE FOUND IN A NORMAL MOUTH HAVE BEEN PHOTOGRAPHED THROUGH A DARK-FIELD MICROSCOPE. THE BACTERIA WERE IN MOTION WHEN PICTURE WAS BEING TAKEN.

MOTION PICTURES OF DIFFICULT OPERATIONS ENABLE KNOWLEDGE OF SURGICAL TECHNIC TO BE WIDELY DISTRIBUTED.

movements of the cells are stepped up forty times or more. The "drinking cells" are seen to put out pseudopodia, or footlike appendages, and to capture drops of fluid and draw them into the cells. The climax of the picture shows the cells actually dividing to form new cells. Even the chromosomes can be seen arranging themselves in formation, like members of an infantry squad, and then dividing to form two or three separate groups.

The time-lapse method of making moving pictures, speeding up actions that otherwise would be too slow to be seen and studied, enables medical research men to discover things which otherwise would escape notice.

The camera is playing an important part in the preparations being made for a possible outbreak of an epidemic of yellow fever in this country. There is in the South a condition which medical men are watching closely. The presence of mosquitoes which carry yellow fever has been made more dangerous by modern air lines. As long as these mosquitoes have no disease bacteria to carry around, they are as harmless as a mosquito can be. But if airplanes plying between the United States and tropical American countries where yellow fever exists were unintentionally to import some disease-laden insects, an epidemic might break out.

In order to be ready for such an emergency, medical men are learning all they can about the yellow fever mosquito. A motion picture showing the life history of this insect has been made in the School of Medicine of the University of Rochester.

In filming such pictures, the camera is mounted on a very rigid tripod and coupled to a microscope. Through an auxiliary eyepiece connected to a beam-splitting device the operator watches the subject being photographed. A small percentage of the light from the subject is diverted through the eyepiece, the remainder going into the camera. At various times, strange insects suspected of playing some part in the transmission of this or that disease arrive at the laboratory to have their pictures taken so scientists can study them better.

One of the highlights of the Rochester medical photography program was provided by an x-ray motion picture showing the action of the jaw, tongue and other organs of the head and neck while words were being pronounced. From a sound track, the actual words spoken could be heard. This illustrates how x-ray movies can be used to study obscure body movements.

The technic of making such a roentgenologic motion picture is interesting because it makes use of high speed lenses. The motion picture camera, suitably shielded against penetration by the x-rays, is focused on a fluoroscopic screen where the x-ray image is formed. This image is of low photographic brilliance, making high speed lenses and film necessary. One such lens, rated at f: 0.85 and developed specially for x-ray work, is approximately twenty-eight times as rapid as an f: 4.5 lens, which is considered "fast" in ordinary photography.

Recent advances in the making of natural color films have opened new fields to the medical investigator. A number of natural color pictures showing various diseased conditions affecting the retina have been made and exhibited by an ophthalmologist. These are actual photographs of the interior of the eye, showing the optic nerve ending, blood vessels and other details. The pictures were taken through the

crystalline lens and pupil of the eye, the pupil being dilated by drugs in order to provide a greater working area.

Natural color film is being used widely in recording various skin diseases and other troubles involving color. Progress of treatment can be watched by means of comparative photographs.

Infra-red photography, which recently was advanced by the introduction of plates and films having greater speed and an extended sensitivity into the invisible red region, is another tool of the modern doctor-photographer.

Infra-red radiation lies in a region of the spectrum having waves of greater length than visible light. It is, in fact, a form of heat. The important property of such heat rays in medicine is their ability to penetrate the skin and show details ordinarily invisible.

Thus, in the case of a patient suffering from a condition not exactly clear to the physician, an infra-red photograph of the affected part might show a ruptured blood vessel. While an ordinary photograph shows only surface details, the infra-red picture makes the subcutaneous veins stand out almost as clearly as if they were on the surface. Ruptured or enlarged vessels, varicose veins and heavily encrusted skin surfaces lend themselves to study only with the aid of infra-red photographs.

Infra-red waves penetrate the deepest pigment. A Negro, photographed with them, appears white, and although he may seem smooth shaven, he is seen to have a distinct beard. In some diseases the skin is so covered with a scab that progress of the healing cannot be watched. Infra-red photography reveals the concealed condition.

Another important part that photography can play in connection with medical progress is to record historical events or reproductions of them, so that they can be depicted at will for the purpose of instruction. One such picture, made not long ago at the Massachusetts General Hospital, tells the story of the first successful public demonstration of anesthesia, which was conducted by William Thomas Green Morton, a dental surgeon. In the picture, members of the medical faculty of Harvard University reenacted the parts of the doctors who witnessed the demonstration, which actually occurred in 1846.

The extent to which photography is interwoven with present-day medicine is almost unbelievable to one on the outside. Researches in bacteriology make use of countless photomicrographs, or magnified pictures of microscopic objects. The technic of making motion pictures of microbe actors has reached a point where almost anything that can be seen by the eye through a microscope can be photographed on a cinema film. A few minutes' view of such a film will tell the student more about the actions of a certain kind of bacterium, perhaps a rare and dangerous one that is not easy to find, than hours of listening to lectures or reading textbooks.

The making of still and motion pictures of difficult operations is a common practice among surgeons. These pictures enable knowledge of surgical technic to be distributed widely, accurately and rapidly.

Public health organizations employ lantern slides and motion pictures, frequently coupled with lectures, to tell the public about what they are doing. A new test for determining the effectiveness of milk pasteurization was the subject of one such film. The steps taken in typing a pneumonia case so that the proper serum could be selected for treatment was another. In the opinion of many, the use of photography, particularly motion pictures, to distribute information and instruction about public health conditions is one of the most valuable services the photographic film can render in the field of medicine. The battle against syphilis, a fight that is just now beginning on a wide scale, doubtless will be made more effective by means of the "motion picture clinic" on syphilis, filmed by the U. S. Public Health Service and the American Medical Association for physicians, and "talking film strips" by the American Social Hygiene Association for lay audiences. A color movie is already being used showing the technic of heat therapy for gonococcal infection.

In the field of x-ray photography, much has been done, and much more will be done. In many hospitals the making of stereoscopic x-ray pictures, which give the physician a three-dimensional view of conditions inside the body, is a matter of routine. Such pictures are valuable in locating exactly the position of a bullet or other foreign body or in appraising the condition of a fracture. Photographic research laboratories are continually perfecting better x-ray films. The Eastman laboratories have done considerable work with full sized x-ray pictures—radiographs of the entire human body, made on one piece of film. The purpose of full length radiographs is not for diagnosis, since that can be done better with localized radiographs, but for instruction and demonstration. Research into the use of soft x-rays, being carried on in the same laboratories, may result in observations of value in medicine.

Tiny cameras which can be swallowed by the patient and which carry their own illuminating system have been used for photographing the interior of the stomach. Movies can now be made of the vocal cords.

In short, there are so many ways in which the photographic film can be of use in medical science that the up-to-date physician has to be a skilled photographer, or at least know enough about the art of picture making to employ it to advantage in lessening human suffering.

MODERN MEDICAL CHARLATANS: II

The will to believe often dominates the wish to know. To will-o'-the-wisp thinkers who are tempted by the wiles and wares of the charlatan the best advice is "Be skeptical!" A word written for the wishful

By MORRIS FISHBEIN

AMONG THE most interesting of the developments in modern scientific medicine have been those relating to the discovery of the vitamins and to the use of mineral salts. Coincidentally, a great deal has been learned about the reaction of the body, whether acid or alkaline. As each of these new discoveries has been introduced, charlatans have been ready promptly to take advantage of it for their own purposes and uses.

Among the most widely promoted of dietary charlatans is Dr. Bengamin Gayelord Hauser, advertised as the world famous authority on dietetics and the famous Viennese scientist. He calls himself "doctor," but he is not a doctor of medicine. He is exploited as a Viennese scientist: He was born in Germany; he has not even worked in Vienna, and certainly he is not a scientist.

If you go to Florida and stop briefly in the city of St. Petersburg, a city of septuagenarians and octogenarians, you will find Hauser in possession of a restaurant where he lectures on diet and health, and you will find his food products, manufactured by the Modern Health Products, Inc., of Milwaukee, the pièce de résistance on all the menus.

From time to time, Hauser lectures on his dietary notions in various cities where his products are sold. The sciences of physiology, chemistry, anatomy and hygiene are not known to him, for these sciences do not descend upon their possessor as a revelation upon the prophets. They have to be learned in the academic halls and in the laboratory with long courses of study and investigation.

Bengamin Gayelord Hauser is a handsome man who wears his hair in a permanent wave and who talks English like a cross between Jack Pearl and Baron Munchausen. When he came to the United States in 1911 from Tübingen, Germany, his name was Helmuth Hauser. It is his story, and he sticks to it, that he was dying of tuberculosis at the age of 16. At that age he had been given up by all American doctors, and so he returned abroad where he met an old physician who prescribed lemon juice. Two weeks of lemon juice cured him of tuberculosis of the hip. He brags that once he took thirty-six lemons a day.

It seems his name was really Eugene Helmuth Hauser, but now by court order he is known as Bengamin Gayelord Hauser. He has a diet for practically every ailment to which modern flesh is heir. There is the mending diet, the vitality diet, the transition diet and the zigzag diet. In all these diets there is a lot of emphasis on mineral salts.

Back of all the Hauser ideas are the Hauser products. In his zigzag system for weight reduction the patients take epsom salt in the morning and senna at night. Between the epsom salt and the senna they do not have time to do anything but reduce.

More recently he has been exploiting the cosmetic diet. It is asserted that both Claudette Colbert and Anita Louise maintain their beauty, as such, with the Hauser cosmetic diet. It seems that it is largely sulfur and the sulfur-containing foods, such as radishes, onions, Brussels sprouts, cauliflower and red cabbage. And then

he recommends iron in the form of a spinach and parsley cocktail. After you squeeze the juice out of dark green spinach and parsley, you add orange or grapefruit juice in equal amounts. Two cupfuls of this a day, it is said, will make your skin beautiful, if it does not make you tired first. It is remarkable how much utter nonsense is promoted in the name of scientific dietetics.

A few of the Hauser products include Santay-Swiss and Anti-Diabetic Tea, against which the government has taken action because of fraudulent claims. Then there is Nutro-Links, a mixture of common salt and Glauber's salts, advertised for rheumatic conditions, and also seized by the government because of fraudulent therapeutic claims.

And next there are Slim, Correcol and the Hauser Potassium Broth, according to the Food and Drugs Administration also sold under false and fraudulent claims. Hauser's Potassium Broth is a mixture of seaweed, alfalfa leaves, okra, potato starch, beet leaves and rhubarb leaves. Then there is Slim, a mixture of senna, bladder wrack and buck thorn bark. And finally there is Correcol, a colon food, which is not a food but a mixture of mucilaginous weed with a small quantity of karaya gum, just another bulk-producing mixture to urge a somewhat sluggish intestine into unwonted activity.

William Howard Hay

High in the Pocono Mountains in Pennsylvania, near Skytop, is the sanctum sanctorum of William Howard Hay, inventor of the hey-hey system of dieting. He was born in 1866 and holds a diploma from the Medical Department of the University of the City of New York in 1891. He practiced briefly in several small places, and then in 1921 he went to Buffalo from Pennsylvania, where he had been operating the Hay rest cure.

For a while he was active in an organization known as the American Association for Medico-Physical Research, an outgrowth of the American Society for Panpathic Physicians. Eventually he became medical director of the East Aurora Sun and Diet Sanatorium, East Aurora being the place in which Elbert Hubbard put forth his banalities. The Pocono Hay-ven, which was purchased at Mount Pocono, Pa., in August 1932, was formerly known as the Mount Pleasant House, a hotel which languished when times became difficult.

But Dr. William Howard Hay's major opus is the item which brought him national attention. He has a book called "Health via Food," in which all diseases are said to be due to dietary errors and deficient drainage. Furthermore, acidosis, it seems, is the result of dietary error, because food is a direct cause of disease and because it is the only source through which we can create these acids.

He has four theories as to these causes of acidosis: the use of too much concentrated protein; the use of refined, processed, denatured, emasculated, bleached, preserved, adulterated foods, chiefly of the carbohydrate group; the combination of proteins and carbohydrates; the retention in the colon of food residues beyond a period of twenty-four hours after the food has been eaten.

Nearly every food faddist develops the obsession that certain substances should not be eaten together. The chief fallacy is the idea that proteins and carbohydrates should never be mixed because proteins need acid for their digestion, while carbohydrates call for alkaline digestive juices. The argument goes that the saliva in the mouth digests starches and sugars, and a pepsin and hydrochloric acid of the stomach digest the proteins. It seems to be asking too much of the simple, unintelligent stomach to keep these foods sorted in order that each one may be worked on by its proper digestive juice. All this, notwithstanding the fact that Americans have been eating meat and potatoes and drinking milk for a good many generations and have turned out to be extraordinarily efficient as physical human beings.

Moreover, most of the foods in nature are a combination of protein and carbohydrate. Milk has been called one of nature's most perfect foods, containing carbohydrate and balanced with food protein. Actually, separation of protein and carbohydrate in the diet is impossible outside a chemical laboratory, unless one chooses to live largely on egg white and cane sugar.

These haywire diets, in order to make the foods that they recommend eatable, twist and contort them into strange and extraordinary shapes. Hundreds of the recipes in the Hay diet demand egg yolk without indicating what is to happen to the rest of the egg. The simplest mixture of lettuce and other greens is promoted with a fanciful name like "Fountain of Youth Cocktail," "Happy Highball," "Pale Moon Cocktail," "Parcel Post Asparagus," "Apartment Chicken" or "Easter Bunny Salad." "Easter Bunny Salad" consists of a piece of head lettuce around which are carrots cut into the shape of a corkscrew. This is "rabbit" food no matter what you call it; yet Hay feels that eating a diet like that will enable the consumer to escape the evils of neurasthenia, fatigue, fears, bodily distress and depression.

And finally, William Howard Hay, like a half dozen other food faddists, recommends fasting as a panacea for many diseases. One of his patients fasted fifty-five days and lost 60 pounds in weight—at least Hay says so. But at the same time, she was cooking for the family, and one wonders whether or not she cheated a little. Anyway, the quickest way in the world to make money is to open a sanatorium for the starva-

tion treatment of disease in which all the patients are charged $10 a day for food.

Vitamin Follies

Among the latest of the great discoveries in the field of medicine are those associated with the vitamins. Everybody knows that there are vitamins A, B, C and D, and that sometimes B is divided into B_1 and G. There is also E, which is supposed to be useful in preventing sterility in animals. We do not have to worry much about E in the human diet, because E is everywhere.

Yet the public interest in vitamins has led to a more extraordinary exploitation than in almost any other field of medicine, except perhaps the glands. Vitamins are vaunted for their use in colds, in rheumatism, in blood diseases, in acidosis, in dental caries and even in baldness, without the slightest evidence that any shotgun preparation of vitamins can accomplish anything very definite in any of these conditions.

The strangest and most extraordinary exploitation of vitamins has been their recent promotion in relationship to beauty, and here we find not only the established vitamins employed but also an alleged new vitamin, the existence of which actual scientific investigation does not even admit. Among the first of these promotions was the inclusion of vitamin D in various ointments and particularly in Woodbury's soap. Just why any one should put a vitamin in soap has not been apparent. Soap is really supposed to take things off the skin and not to put them on.

Incidentally, attempts are now being made to sell a cream called Endocreme, which contains a glandular preparation that will cause wrinkles to fly right off the face. Just where the wrinkles go nobody knows.

In various magazines, particularly those devoted to the so-called "fair sex," in recent months have appeared a number of announcements about a new vitamin called vitamin F, which it seems was discovered by one August John Pacini, a resident at various times of Chicago, with a medical record not susceptible of much verification. It seems that the elusive Pacini has evolved out of linseed oil some substances which are very important for rats. Working with the assistance of two young ladies in the Pacini laboratories on East Ohio Street, he found, for example, according to some of the claims, that sex can *(Continued on page 172)*

By LOUIS FAUGERES BISHOP JR.

WHEN HEART DISEASE ARRIVES, TAKE COURAGE, AND BE CONTENT WITH A QUIET HOME, YOUR FAMILY AND RESTFUL PASTIMES.

Century Photo

YOUR AGE and YOUR HEART

PREVENTION of heart disease is one key to longevity. When we see some one dear to us gasping for breath like a fish out of water because of advanced heart disease, we wake up and say, "What could we have done to prevent this?" We could have watched the decades pile up and could have had a periodic examination to catch the trouble in its earlier stages. But when we look at the situation more closely we find that it may not have been entirely our fault. Campaigns have been unceasing for the prevention of most diseases, except heart disease. Our most important organ has been neglected, and yet we know that a healthy heart is life itself.

Capital and enthusiasm for slogans and health centers have been marshaled for staving off the ravages of pneumonia, cancer, tuberculosis, diabetes, syphilis, anemia, infectious diseases of childhood—even down to decay of the teeth. Unfortunately, until now little value has been placed on conserving the unconscious rhythm of the heart.

Stop a minute and think what you may be like at the end of the next decade so far as your heart is concerned. Do you want to be bedridden and breathless and perhaps look more like a water-logged old ship than a human being? You say, "I'll get checked up next month"; but you put it off, and another year has slipped by. You probably take better care of your radio, and there are probably no lengths to which you don't go to maintain the health and joy of your dog.

A woman of 40, who had a heart ailment, chose to neglect herself for ten years and then found to her surprise that serious changes had occurred. A physical examination yearly may save you the distress of such a mental shock.

You cannot turn the clock back. Nature is inexorable, even though she does tease man with the lure of longevity by adding a few years every generation to his life span. But you certainly can oil your machinery, put a patch on your tire and suit your speed to your strength and age. All of us want our hearts to keep on beating; but still we live at such a breakneck speed that one day we find we are worn out and on the shelf at too early an age. No one wants to rest for the remainder of his life because of a damaged heart at middle age.

Heart disease is undoubtedly on the increase, but let us scan the facts and see whether the picture is as black as it seems. We budget our heat, light, food, culture, education and clothes; why not our heart health? Let's sit down and do a little heart health cost accounting. Where do we stand? What are we giving to the upkeep of heart health? What do we spend to keep fit? We spruce up our wife, our house, our car, but what about the old pump? Here goes for the cardiac account sheet!

CARDIAC ACCOUNT SHEET

DEBITS

Every year in the United States there are 2,000,000 cases of heart disease and 300,000 cardiac deaths. This does not take into consideration the fact that many who do not die are handicapped, become economic liabilities and are not able to enjoy life.

Again in the United States the death rate is on the upgrade: from 124 per 100,000 in 1920 to 224 per 100,000 in 1932 for heart mortality. And in 1935 heart disease was the leading cause of death after age 35!

Men, who form the major portion of the wage earners, are hardest hit by heart disease. Perhaps 1 out of every 5 men dies of heart disease.

The prevention and cure of heart disease lies in knowing the cause. Most types we know; some few we do not. For instance, no cause is known for congenital heart disease or for rheumatic fever, which leads in many cases to rheumatic heart disease.

BUT—

The rosy future: Forewarned is forearmed! Note the credits as compared with the debits. Science is constantly studying for our benefit the secrets of metabolism, nutrition, heredity and hygiene.

CREDITS

Science has something to boast about in that the span of life has increased from an average age of 30 years in 1800 to an average age of 60 in 1937.

And the scientists tell us that if we heed their advice we can add another ten years to our life span.

Prevention starts when we know the cause of heart disease. The major causes are approximately as follows:

Arteriosclerotic	40 per cent
Rheumatic	25 per cent
Syphilitic	10 per cent

So that takes care of 75 per cent of the causes and gives us something to shoot at in prevention.

The other minor causes are congenital, too much or too little thyroid, infections and nerves.

Prevention of arteriosclerotic heart disease lies in slowing our pace, taking care of the waistline (many obese people have heart disease and high blood pressure) and also the *waste*-line, keeping the intestinal tract oiled and controlling the diet. Take regular exercise. Study your heredity. Periodic health examinations are a great check to premature old age. Your intake of alcohol, tobacco and tea is dependent on you as an individual. If they are upsetting to your digestion, eliminate them. If nature gives you a warning, don't shrug your shoulders. Pause and take stock of breathing of which you are conscious, pressure in the chest on exertion or actual pain. Learn how to enjoy limited activity.

Prevention for rheumatic heart disease must be along general lines. Raise the standard of living. Observe the rules of hygiene. Take care of the child with rheumatic fever, but give him a niche in the workaday world. Consider him an asset, not a liability. Teach him to do one thing well. Examine his teeth and tonsils, and keep him from further infection.

Syphilitic heart disease is 100 per cent preventable. Neglect in the beginning may mean heart disease twenty years later. Copy the Scandinavian program.

On the prevention of congenital heart disease, so far nothing is known. We must rely on researches in genetics, care of the mother and prevention of infection of the unborn child.

If the system has too much thyroid, heart disease may be prevented by removal of the thyroid gland.

If there is too little thyroid, prevention is possible by the administration of thyroid.

Prevention of nervous heart disease is up to the individual. Lay out a new plan of life.

Infectious diseases and those related to the heart are controlled to a great degree today by scientific medicine.

Doctors make earlier and more accurate diagnoses and have better tools with which to detect the particular brand of heart disease.

Adjustment even to the most severe type of heart disease is possible!

IN THE GAME OF LIFE SOME PERSONS GET OFF TO A BAD START. THEY ARE BORN WITH A DEFECTIVE HEART, THE PRESENCE OF WHICH MAY NOT BE REVEALED UNTIL SOMETIME LATER WHEN FURTHER DAMAGE MAY RESULT FROM AN INFECTION DEVELOPING THERE, AS IT IS THE POINT WHICH OFFERS LEAST RESISTANCE. HERE HOPE FOR PREVENTION LIES IN FURTHER DISCOVERIES IN GENETICS AND PRENATAL CARE.

Cy La Tour

All we need to do now is to set up an individual prevention program by breaking down our heart health cost accounting.

Why are people living longer? Because science has gained a strangle-hold on infections in children for one thing. If children can weather the first years of life they will probably mature to that period of life when heart disease might develop as a result of the wear and tear of existence.

Is all the increase in heart disease a fact? Yes and no. Many conditions used to be labeled heart disease that were not heart disease at all. Death was not catalogued properly. We are now more accurate with our naming of disease; instruments of precision have aided the hand and the eye of the physician, and in the natural course of events there has been an increase in the number of deaths ascribed to the heart. Then, too, we focus today on the word "degenerate": nobody "grows old"—he degenerates. In short, while the statistics of heart disease may send shivers down our spines, we really should congratulate ourselves that our span of life gives us a chance to live to that period at which heart disease sometimes develops. Modern medicine must teach us "how to live with heart disease and like it."

The next important point to have clear in the minds of all who would prevent heart disease is to know the cause of the particular brand of cardiac ailment.

In the first decade are those babies born with a defective heart. In the game of life some of us even get off to a bad start. The heart may be abnormal at birth. It may be outside the

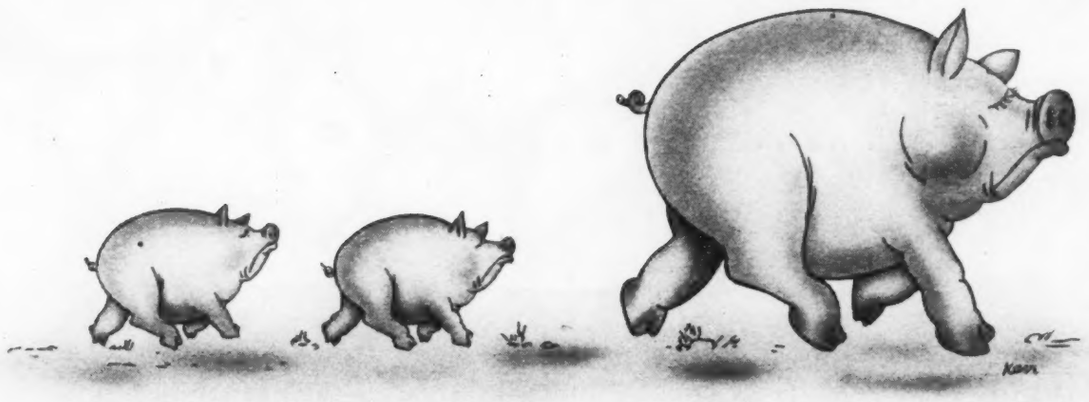
Ewing Galloway *Cy La Tour*

HEART DISEASE IS PRONE TO DEVELOP IN THE BADLY HOUSED, UNDERNOURISHED CHILD OF THE TENEMENT DISTRICT AND IN THE OBESE, SELF INDULGENT ADULT.

chest, perhaps in the abdomen. It may have one or two chambers instead of the usual four, perhaps almost resembling the primitive pulsating tube of a fish. When nature deviates from normal in the heart, it is like being born with webbed feet or an unstable nervous system. These "blue babies" usually live but a brief span. Nature obliterates them. Anatomically defective hearts are therefore rare. On the other hand the defect may be so slight that it escapes notice until later in life, when it is finally brought to light that the person has a defect in the structure of his heart. In this case further damage may result from infection which may attack an imperfectly formed organ, being the point that offers the least resistance. This type of heart disease is still an unsolved problem. Here hope for prevention lies in awaiting further discoveries in genetics, heredity, infection of the unborn child or the influence of the mother's health. When the blue baby lives, infection is the enemy against which to guard.

The first two decades of life seem to be hardest hit by rheumatic heart disease. Rheumatic fever plays havoc with young hearts. Prevention here is difficult because the cause of rheumatic fever, which often results in heart disease, is unknown. At the moment it is believed to be due to some form of the streptococcus. There are at least a few general points that are known about rheumatic fever: Outward manifestation of the disease is generally apparent from the red and swollen joints, but the inward damage is in the heart, which is usually involved at the time the rheumatic fever occurs, resulting in many of the valvular defects so commonly observed. The badly housed, poorer classes of society are apparently susceptible to rheumatic fever. It attacks the female sex more frequently than the male. It occurs in cities more often than in the country. There seems to be a greater prevalence of rheumatic fever in northern than in southern climates. It is obvious, so long as we do not know the cause of rheumatic fever, that our campaign for prevention must be along the line of better living conditions. It is important to remove bad tonsils when they are present. Prevention of rheumatic heart disease must be general rather than specific.

In babies and youth there is still a rather baffling problem, so far as prevention of heart disease is concerned. Perhaps until science gives us a new line of thought on this cardiac assault of these first two decades of life, our chief reliance must be on keeping the child with a heart ailment comfortable. Make the best of his handicap whether it be due to congenital malformation or to rheumatic fever. Admirable work is being done with mentally defective children, and many of these ideas of reconstruction and rehabilitation can be applied to the child with the cardiac handicap. Today the clue to a happy and useful life for a child with a mental or physical defect is to consider him an asset to the community. With that end in view, teach him how to do perhaps one thing but that thing well. The government thinks of different kinds of soil or timber as resources; but the lesser grades are not considered liabilities. Why *(Continued on page 158)*



THIS LITTLE PIG

went to market—and thereby hangs a tale

By DAVID O. WOODBURY

THIS LITTLE PIG . . . had trichinosis. Consequently, when he went to market and was cut up into sausages and pickled pig's feet some of the people who ate him got trichinosis and died. Many did not die but carried the infection in their bodies all their lives, for there is no cure. Some, wiser than the rest, did not get the disease at all, because they cooked the little pig properly and killed the trichinae instead.

Between 10 and 20 million Americans have contracted this disease; we are the most trichinous country in the world. Prominent medical men and public health officials, acutely aware of the situation, are taking definite measures to combat it. The U. S. Public Health Service is conducting laboratory research on trichinosis, while the department of health in New York City is circulating information to all doctors in the city, urging them to help in its control. In the end, however, the public itself must furnish its own protection, for trichinosis is a filth-borne disease which can be eradicated only through proper habits of preparing food.

THOROUGH COOKING AFFORDS THE ONLY SAFE PROTECTION AGAINST TRICHINOSIS.

Contrary to wide belief, trichinosis is not a bacterial disease caused by rotten meat but an infestation of perfectly sound meat by a tiny wormlike parasite called Trichinella spiralis. It originates mainly in hogs fed on garbage containing already infected pork scraps. The worms lodge in the flesh of the hogs and breed there without causing their host any apparent inconvenience. They pass unnoticed even through the slaughter house, unless they are fairly swarming over the carcass.

When infected pork is eaten the larvae of the worm lodge in the intestine, which immediately makes a more or less violent effort to be rid of them. If the meat is heavily infested this action may not take place in time to prevent female parasites from developing and producing their young—500 or more apiece. These new larvae strike rapidly through the intestinal walls and are absorbed by the victim's blood stream. Eventually they lodge in the muscle fibers, where they surround themselves with little capsules or cysts and may remain alive for years. It is these cysts which, if numerous enough, cause serious harm.

After the first intestinal upset, trichinosis frequently lies hidden for a long time, perhaps six months or more. When it finally comes to light it is far too advanced for treatment. Severe trichinosis causes intense pain and leads to general debility, fever and, it is believed, an epileptiform type of brain disease; death sometimes ensues. Authorities differ as to mortality rates, but figures as high as 16 per cent have been noted in epidemics. In mild cases the symptoms are sometimes deceptively similar to

those of typhoid and rheumatism. Only a complete blood count can be relied on to detect trichinosis in all cases.

In view of this alarming situation, what are the health authorities doing about it? Well, the U. S. Government Meat Inspection Service is one of the finest in the world, yet there is so little it can do to control trichinosis by inspection at the slaughter houses, that it makes no provision for condemning infected hogs unless they are visibly alive with the disease. The reason is simple: there is no test for trichinous meat except by the actual destruction of the muscle fibers and microscopic examination. Since this is not practical, government inspectors cannot guarantee *any* raw pork as safe. The government does, however, maintain a close supervision over certain pork products, such as pickled and salt pork, smoked hams and the like. Stringent rules are laid down for cooking temperatures, brine concentrations, refrigeration and other treatments which will definitely kill trichinae. But there is an unfortunate limitation here: The federal government can inspect only meat products destined for interstate or foreign commerce. Fully 30 per cent of the meat we eat is prepared locally, either on farms or in small country slaughter houses; and until all states enforce regulations similar to those of the government, trichinae will have a free channel into the homes of consumers.

There is only one safe protection against the disease: *thorough cooking.* Raw pork—that is, pork not processed by smoking, pickling or other means—must be cooked until white! Pink pork is dangerous and should never be eaten. A minimum cooking temperature of 137 F., *penetrating to all parts of the meat,* is required by the government in inspected plants. This temperature is easily obtained at home if the housewife will simply get her stove hot enough and cook the meat long enough. It is impossible to set a time formula for cooking, because of the varying thicknesses of meat; but if the pork is cooked till white, all danger is averted.

Special hazards lurk in hot-dog stands. To be safe the customer must be sure either that the frankfurters he buys have passed federal inspection or that they have been thoroughly cooked at the stand. Hamburger is also suspect. It frequently contains ground pork—and is often served so underdone that trichinae are not killed. As for eating uncooked or half cooked pork, no protection is possible. Trichinosis is painful, dangerous and widely prevalent, but no one need contract it unless he takes a stupid pride in being careless or ignorant.

The Choice of a

I WANT (WHO DOES NOT WANT?) A WIFE,
AFFECTIONATE AND FAIR,
TO SOLACE ALL THE WOES OF LIFE,
AND ALL ITS JOYS TO SHARE;—

PROBABLY the most important decision in the life of a given person concerns the choice of a marriage mate. No one can call his life a success if he has made a really bad choice. Incompatibility for any reason whatever is a serious matter which not only will take the joy out of living for the parties concerned but will almost surely react on the children that may be born to such a couple. Incompatibility may be due to temperament, culture, manners, education, religion, race or family; but whatever the cause it is certainly a heavy burden for a marriage to have to carry in the race of life.

Marriage is a most important step, and it behooves the contracting parties to approach it with respect and even caution. There are, unfortunately, in this country of ours two blind deities. One of them is standing in front of the court house with a pair of scales in one hand and a two-edged sword in the other. Her name is Justice. It would seem that she should snatch the bandage from her eyes so that she could read the balance accurately and unerringly strike the guilty fellows with the avenging sword. The other blind god also has to do with the court houses and particularly with courting. His name is Cupid. Surely this little fellow needs his eyes wide open. Several years ago Charles Benedict Davenport made the remark that "young people should fall in love intelligently." His statement was received with jeers and derision, but calm consideration compels us to insist that he was right.

Too often "falling in love" is an extremely precarious business which may utterly wreck one's chances for happiness. Those who insist that this is the proper way for us to choose our mates should take cognizance of the fact that this country, where this method is followed with abandon, has by far the highest divorce rate in the world. They should be reminded of the myriads of unhappy marriages which are wrecking the happiness of so large a proportion of the population. Surely the present method of selecting marriage mates is by no means perfect.

Can the method be made more rational? Can these customs be changed? Certainly. As a matter of fact, every nation and race and even every large community has its own peculiar customs in this respect. There are among the races of the world enormous variations in methods by which mates are chosen. All this means that such customs can be changed and have, as a matter of fact, been changed repeat-

MARRIAGE MATE

By THURMAN B. RICE

edly in the past. Why then shall we not attempt to put them on a rational basis? The cry will be heard that we are destroying romance and making the world sordid. On the contrary we are trying to save romance and make it last, and last, and last. Surely there is nothing more sordid than the divorce court with the family secrets dragged out before the public gaze. As a matter of fact the marriage choice is sordid only when a young man or woman neglects to exercise prudence and caution in making so important a decision.

Certain general principles need to be brought to the attention of thinking people. For example, in a great majority of cases, marriage mates will be taken from the group with which one is associating when one is of marriageable age or approaching that age. Most young people marry from the high school, college, church or office "bunch" with which they are engaging in social contact. For that reason, one should be careful in choosing the "bunch" with which one is accustomed to associate. The boy or girl who "runs around with a fast set" will almost surely marry that sort of person. On the other hand, one who is studious and likes studious people will usually marry such a person. So it is possible to choose in a general way what sort of mate one would like even before meeting the party who is ultimately chosen.

Parents can therefore do much to determine the type of sons-in-law and daughters-in-law that they shall have for the parents of their future grandchildren. Furthermore they can set examples of manhood and womanhood before the children in such a way as really to lead the young people to choose accordingly. It is unlikely, for example, that the daughter of a real gentleman will be attracted to an abusive cur with bad manners, and it is unlikely that the son of a man who has no consideration for his wife will be able to treat his own wife with the respect which she deserves. A mother who spoils her son by hanging up his clothes for him and preparing special dishes for his breakfast, even though she is not thanked for it, is making trouble for his wife and, by the same token, for him.

At the risk of being considered arbitrary and impractical I shall set out certain specifications for a desirable marriage mate. Few persons will have the opportunity to meet a person of the opposite sex who could fill every one of these requirements, but even so they are of such importance as to command the respect of every thinking person.

OF TEMPER SWEET, OF YIELDING WILL,
OF FIRM YET PLACID MIND,
WITH ALL MY FAULTS TO LOVE ME STILL,
WITH SENTIMENT REFIN'D.

—John Quincy Adams.

First: *The mate must be healthy.* It is hard to see how a marriage can succeed in a really big way when from the first, one or the other of the mates is unable to carry his end of the burden and accept the problems of married life as a normal and healthy individual. Let us suppose that the wife is subject to heart disease and cannot for that reason safely bear children. Surely every normal man will wish to have children. Suppose it is the husband who is ill and cannot for that reason work and support his family. What then? Marriage calls for health and strength. In case one or the other of the mates becomes ill after the marriage has taken place, the healthy mate will be expected to jump in and make the best of a bad situation. Even so the burden is likely to become exceedingly heavy, and it would be most unwise to go into such an arrangement either knowingly or unknowingly.

When the cause of the physical disability is a transmissible disease the situation is still more dangerous. Tuberculosis can readily be transmitted to the mate and the children. Syphilis and gonorrhea not only can and probably will be transmitted but will undoubtedly cause intense dissatisfaction with marriage. One can readily suppose that the transmission of a venereal infection to a trusting mate would sound the death knell to all hope of happiness. It would seem the reasonable right of every person contemplating marriage that he have some assurance that the prospective mate is free from transmissible disease. Unfortunately all the diseases mentioned are capable of lying latent for months and years, and it is by no means easy to assure oneself that one is free from them in case one has ever had them. When there is the least doubt, a careful physical examination by a competent physician is indicated.

Second: *Hereditary defects and tendencies are to be avoided.* Blood will tell. Certain organic diseases are known to be hereditary. Insanity and feeblemindedness of certain types undoubtedly run in families. Some forms of deafness and blindness are hereditary. It would be foolish to marry an individual known to be a "bleeder" or a carrier (female) of that condition. In one instance, in which two young people were deeply in love, it was well known that nearly every member of one family concerned had become insane and that nearly every member of the other family either had died from tuberculosis or had been made an invalid by that disease. Friends warned against the marriage but without avail. Five children have been born. Two are dead from tuberculosis, two are already insane, and the other is a tuberculous invalid who is known to be very "queer."

Every parent is proud of the intelligence of his children. For that reason every prospective bride and bridegroom should be careful to assure themselves that their children will probably be intelligent. One way to have such assurance is to marry an intelligent person. If on the other hand a man marries a stupid wife, he may expect stupid children. There are times when the "dumb Dora" type of girl seems great fun, but she will get tiresome after a few years of married life, and she will probably transmit her mental inferiority to her children; and the same may be said of the "dumb Daniels," of whom there are many.

Matrimony really entails marrying a family rather than an individual. One lives with the individual, to be sure, but one must associate with the family as well. Furthermore, hereditary traits come more from the family than from the individual. There is an old Norwegian proverb which runs as follows, "Marry not the maid who is the only good maid in her family." The reason is apparent. When one remembers that the mixture of two bloods may continue to bless or curse the human race for the remainder of time, there is need of caution. It may well be that such a mixture will be the deciding factor in momentous events ages hence. One wonders what might have been the history of the world if the parents of Pasteur, Lincoln, Washington, Shakespeare, Goethe and others had married some one else. Many a parent of a criminal has had occasion to wonder what would have been the difference in his life, if he had married gentle Jean instead of tempestuous Jezebel. Have a thought, my conscientious young friend, what blood you will mingle with yours in your children.

Third: *Morals and manners are extremely important.* A man or woman would be very foolish to marry some one whose morals and manners are undetermined or undesirable. In case the mate has been sexually immoral it is certain that he has at least been exposed to venereal disease and possibly now may have such a disease. Even if he were perfectly healthy in that respect, one would scarcely wish to marry a person whose mind is stored with memories of illicit relations promiscuously indulged. It is in the nature of things that respectable husbands and wives will wish that their consorts may have behaved themselves in the years before as well as after marriage. He who seeks promiscuous relations has evidently cheapened himself, and no one wants a cheap mate if he can find a precious one.

I myself would not wish to be married to a shoplifter. She might easily get me and my family into trouble. If I were a woman, I should want my husband to have an *honest* occupation or profession. In case he were a safe cracker, I should be afraid he would be caught and would plunge me and my family into disgrace as he spent long years in the workhouse. Besides I should want to know that the bread I ate and fed to my chil- *(Continued on page 175)*

EYES in

CONRAD BERENS

contributes the fourth article of a series on the effects which illumination has on the eyes

FOR THOUSANDS of years the work of man was performed chiefly in daylight. Until comparatively recent times, life was simple, and the tasks of seeing were mainly those called for by outdoor activities. The printing press utilizing movable type was not invented until a few hundred years ago, and books and newspapers were not common until recent times. The steam engine was perfected less than two centuries ago, and the modern factory system is less than a century old.

Before the printing press and the steam engine transformed our habits of life, man worked in the daylight and slept while it was dark. In homes, illumination at night was ordinarily from the flickering fire in the open grate, sometimes supplemented by grease lamps, pine-knots and candles. Most persons were illiterate; reading and writing were accomplishments which belonged only to the scholar. Visual tasks of the average person did not call for close focusing.

A little more than a century ago coal gas began to be used to illuminate cities, and its use became widespread. Later, kerosene was secured from petroleum, and through it millions of families were supplied with night illumination of fairly good quality. A little more than half a century ago Edison perfected the incandescent lamp. These advances in illumination have lengthened the day of wakefulness and have transferred man's interests from the sunlight of the outdoors to the artificial illumination of the indoors. Eyes, which for tens of thousands of years had been accustomed to distance seeing, were called on to accommodate themselves to new conditions of reading, writing and occupational activities requiring close focusing or near seeing.

Under these conditions it is not surprising that innate defects are becoming evident in many eyes, especially eyes that are forced to carry on their tasks under poor lighting in factories.

If the light is inadequate, poor vision results, for vision is the result of the coordination of light, the eye and the brain. If the eye is defective in its refraction of the rays of light, vision is blurred. And finally, if the brain does not interpret correctly what is conveyed to it from the eye, a faulty visual picture is formed.

Before the dawn of the present century little attention was paid to the lighting conditions under which millions of industrial workers

carried on their tasks. But now that is rapidly changing, for we are learning that inadequate lighting lowers human efficiency and is a major cause of industrial accidents. We also realize that inadequate lighting may often be a cause of eye dysfunction through continued eyestrain.

Studies have indicated that vision has an important influence on the health, happiness and efficiency of industrial workers. Correction of defects in vision, such as nearsight or farsight, and correction of faulty illumination are important to the welfare of all industrial workers. Persons who live in a half seeing world, whether because of uncorrected defects in vision or inadequate illumination, or both, cannot attain maximum efficiency. Conservation of the eyesight of industrial workers is, therefore, one of the major problems of industry. In many factories, studies have indicated that more than half of the workers have visual defects. If conditions of seeing are poor, the sight of persons so afflicted may have a tendency to become progressively worse.

Improved illumination is thus important to both the individual worker and the industrialist. By improving his efficiency a worker enhances his earning power. More efficient workers mean greater profits to employers. Adequate lighting is not only a humane step toward the conservation of eyesight, but it is good business for industrialists.

Factory lighting to be comfortable and conducive to eye hygiene should (1) provide adequate illumination of good quality; (2) be well diffused, supplemented where necessary with direct localized illumination, and (3) eliminate too great contrasts in the surrounding field, especially glare, annoying highlights and shadows.

The effect of poor conditions of illumination may be increased by improperly corrected errors of refraction, undiagnosed and untreated disorders of the motor functions of the eyes and by improper atmosphere and surroundings as well as by the type of paint and wall covering used.

Proper illumination of a factory involves the following factors: (1) amount of light; (2) distribution; (3) diffusion; (4) direction; (5) steadiness, and (6) quality.

The quantity of light depends on the task to be performed. The size, brightness and color of the object, its reflection, the contrast between the object and its background, the visual speed required (that is, the length of time that the object will be exposed) are important factors in determining the necessary amount of light. The amount of illumination must permit optimum visual acuity, maximum visual efficiency and maximum speed of vision as well as eye comfort and health. Defective eyes generally require greater illumination than normal eyes.

When the illumination is increased the eye with subnormal vision usually more nearly approaches the normal eye in its functional power. High levels of illumination properly distributed with the elimination of glare are far less fatiguing than low levels. Some of the beneficial effects of increasing illumination to the optimum value are stated to be: (1) increased speed of discrimination; (2) increased visual acuity; (3) more rapid adjustment of the eyes for seeing at different distances; (4) an increased ability to maintain clear vision, and (5) increased comfort and health.

Illumination of high level is necessary for the inspection of practically all types of objects, especially for the detection of spots on cloth. Cowan reports that in one factory an increase in production of 12.5 per cent was obtained by increasing the illumination from 5 footcandles to 20 footcandles. Authorities have shown that with increased visual comfort there is a decreased number of mistakes, less useless work and fewer accidents.

Codes for industrial lighting have shown a strong trend toward raising the minimum requirements for illumination in various tasks. In ten factories the former average standard of illumination was 5.6 footcandles. At the present time the average illumination in these

factories is 18.9 footcandles. This increase in illumination has resulted in an average increase of 13.2 per cent in production.

Distribution of light is an important factor for eye comfort and hygiene because it has an important bearing on fatigue. The distribution of illumination includes the consideration of glare, excessive contrast, shadows, direct and indirect lighting conditions, semi-indirect lighting and flood lighting. The ideal condition exists when general illumination is relatively high and special lighting units raise the level of illumination in areas requiring detailed discrimination. Although the amount of light on a working area may be sufficient, unless the surrounding areas, such as floors, walls, stairs and hallways, are adequately lighted, the high local illumination is conducive to eye fatigue and may foster accidents. The eye of the worker, adapted to the bright light, is for some time unable to see clearly in a relatively dark area. Moreover, when the worker returns to the brightly lighted area, his eyes are affected by glare until his eyes become adapted to the brighter light.

Another factor associated with distribution is diffusion. Diffuse light is important in avoiding fatigue and eyestrain. Complete diffusion with as few differences in brightness as possible and no high brightness images that might be reflected from surfaces are the objectives in the diffusion of illumination.

Lighting units of high brightness should be placed well above the level of the worker's eye and outside his field of vision.

The direction of light is important, and failure to observe simple precautions may result in adverse seeing conditions. If reflection from the task or nearby bright objects is directed into the eye, and if the source of light lies within the field of vision, glare results.

Glare is that condition of illumination in which any brightness within the field of vision causes discomfort, interference with vision or eye fatigue. Glare decreases visibility and is conducive to eyestrain. It ordinarily is caused by excessive light or poorly distributed light. It also may result from reflection by polished or bright surfaces within the field of vision. When light sources are within the normal visual fields, they should be shaded to prevent glare; when overhead, glare from them may be prevented by the use of diffusing glass enclosures. Indirect lighting is exceptionally good for eliminating glare.

Unsteady, variable and flickering illumination, forcing the eye to readjust itself constantly under the varying conditions of seeing, may also cause eye fatigue. Shadows caused by clouds and smoke may cause annoying variations in light. Flickering which results from a varying current is extremely tiring. Moreover, when the eye has been accustomed to a high degree of illumination during the day and natural light fails, making artificial light necessary, a higher level of illumination is usually required than at night under artificial lighting alone.

The quality of light is of course an important factor in illumination. Most authorities agree that the more closely the quality of light approaches diffused sunlight, the better it is for comfortable seeing. Much of the artificial light now in use is considered too yellow. The quality of illumination influences the appearance of a colored object and also affects its contrast with other objects.

It should be remembered that daylight illumination as well as artificial illumination may be a source of glare and ocular fatigue. For best daylight illumination, the sawtooth, monitor or skylight windows are to be preferred. When side windows illuminate a factory room, glare often disturbs many of the workers. Distribution of daylight, especially in the part of a room remote from the windows, may be improved by the use of refracting or diffusing glass.

Reflection of light from outside surfaces affects the lighting of a room. Therefore faces of structures, walls of courts and roofs of sawtooth buildings should be finished and maintained to avoid glare.

If the windows have shades they should be adjustable so that they may be regulated according to exterior conditions. Light colored window shades should be used because at night or on dark days they reflect artificial light back into the room. Shades that transmit diffusely most of the natural light they receive will generally improve the daylight illumination. If Venetian blinds are properly finished and adjusted, they may control the distribution of light and glare from windows.

The Illuminating Engineering Society has published reports on minimum illumination for the following industries: printing, shoe manufacturing, textile, candy and cleaning and pressing.

In the printing industry the average level of from 10 to 20 footcandles of illumination, in addition to special lighting for close work, is recommended. The proofreader, lithographer, linotype operator, compositor and engraver require a higher value of general lighting between 50 and 100 footcandles, preferably completely indirect.

In the shoe manufacturing industry a general illumination of from 10 to 20 footcandles is regarded as sufficient. For close work on dark material, 40 or more footcandles is required. In the stitching department a general illumination of from 6 to 10 footcandles, supplemented by from 20 to 50 footcandles of local lighting for all work that is done on light material and from 50 *(Continued on page 159)*

DIABETES

By REGINALD FITZ

DIABETES has been recognized for a long time as a disease characterized by the passage of sugar in the urine and by an excessively high amount of sugar in the blood. In 1788, Dr. Thomas Cawley, an English physician, described the case of one Allan Holford, a young man afflicted with diabetes, who died. At the postmortem examination the pancreas was found to be full of stones, and as a result of this observation it was suggested that diabetes must in some manner bear a close relation to that important organ of digestion. In 1889, a little more than a hundred years later, Drs. Minkowski and Von Mering in Germany produced diabetes experimentally by completely removing the pancreas in the dog, the rabbit and the pigeon. Thus did these investigators in the laboratory prove what had been suggested earlier by clinical observation. A practical application of this important knowledge was at once eagerly sought.

In 1921, Drs. Banting and Best, working in Toronto, were able to make a pancreatic extract which is now known as insulin. They were able to demonstrate in animals with experimental diabetes that with the help of insulin the excessively high blood sugar concentration could be reduced, the excretion of sugar in the urine could be abolished, and a definite improvement could be observed in the general condition of their animals. Preliminary experiments carefully carried out at last led them to feel that it was safe to utilize their pancreatic extract in cases of human diabetes. The first patient ever to receive an injection of insulin was a boy 14 years old who, Jan. 11, 1922, was given the first dose. Drs. Banting and Best reported that as a result of daily injections of insulin there resulted an immediate improvement in the boy's condition; he became brighter and more active; he looked better, and the excretion of sugar in the urine was notably lessened. This was the first report on the successful use of a pancreatic extract for the treatment of diabetes and was at once accepted the world over. On Banting's and Best's work are largely built the present methods for treating the disease. Their investigations already have saved countless lives.

Diabetes is a common disease. It afflicts people of all ages and of both sexes. It is most commonly encountered in people who are in middle life, although occasionally it is found in very young children or in the very old. The immediate cause of diabetes is not known. It is well recognized, however, that there are at least two important predisposing causes which lead to this disease. Allowing oneself to become overweight is one, and inheritance is the other. Diabetes is in large measure a penalty for obesity. The sooner the dangers of overeating and underexercising are realized by everybody in this country, the sooner will the advancing frequency of diabetes be checked.

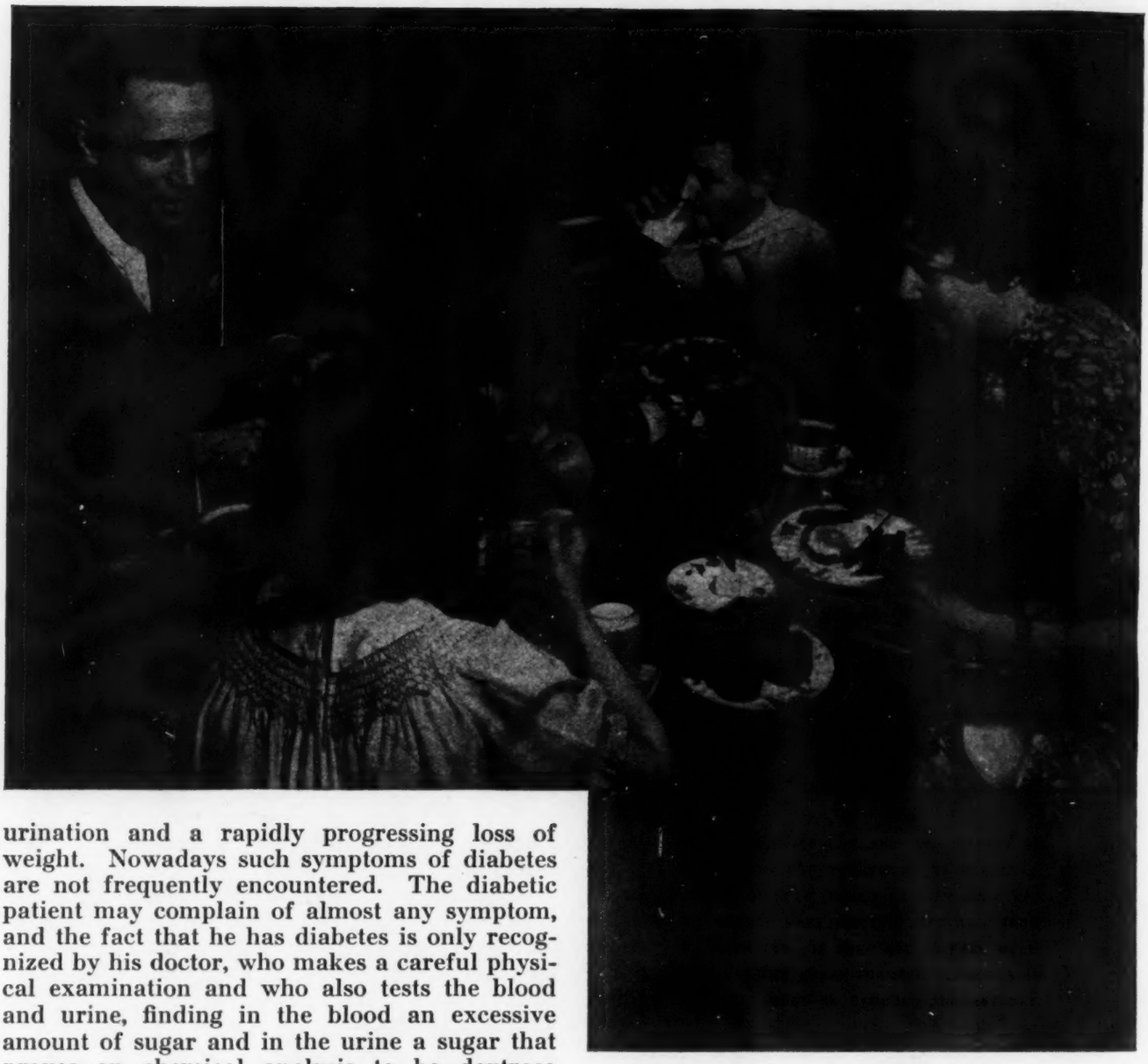
There also is a tendency for diabetes to run in families, and certain notable diabetic families have been reported. If a diabetic woman marries a diabetic man their children almost certainly will have diabetes. If one of the parents is diabetic and the other is not, about half the children of the couple are likely to have diabetes; and if there is a tendency for diabetes to appear in any family the chances are that this tendency will become apparent at some time in some future generation. On the whole, inherited diabetes tends to be mild, although, as has been pointed out by various observers, in successive generations the onset of the disease is apt to occur at a successively earlier age and, as is well recognized, in younger people, diabetes is apt to be more severe than in the elderly.

Occasionally acute infectious diseases appear to play a part in precipitating an attack of diabetes. Mumps, for example, may occasionally be followed promptly by acute diabetes, and similar cases have been observed soon after a variety of other acute infectious diseases.

Racial predisposition to diabetes also is spoken of. It appears prone to develop in Jews, while amongst the Japanese it is almost unknown. It occurs frequently in the large cities of Europe and America and appears to be much less frequent in the cities of the Orient.

More concerning the cause of diabetes is not known. This knowledge, rudimentary as it is, however, is of practical value. To avoid diabetes, people must not allow themselves to get fat. Doctors must be on the alert to recognize diabetes early and must make careful routine urinalysis in all cases after infection. To protect those with a possible inherited diabetic liability against the development of unrecognized diabetes, doctors must encourage such diabetic suspects to have an annual or a semi-annual urine sugar test.

The symptoms of diabetes are variable. Students formerly were taught that the diagnosis of diabetes was simple because patients with the disease so universally complained of excessive appetite, excessive thirst, excessive frequency of



urination and a rapidly progressing loss of weight. Nowadays such symptoms of diabetes are not frequently encountered. The diabetic patient may complain of almost any symptom, and the fact that he has diabetes is only recognized by his doctor, who makes a careful physical examination and who also tests the blood and urine, finding in the blood an excessive amount of sugar and in the urine a sugar that proves on chemical analysis to be dextrose rather than some other form of sugar which may occasionally be excreted.

Patients with diabetes still are encountered who first consult a doctor because of failure in vision due to diabetic cataract; or because, following some minor accident, such as stubbing a toe against a curbstone, or because of wearing a shoe that is too tight, a blister develops which terminates in diabetic gangrene; or because apparently out of a clear sky a carbuncle develops, and it is found that the patient has diabetes. In other words, the onset of diabetes is insidious and often symptomless. Because of this fact and because diabetes is so common a disorder the periodic health examination is an important precautionary measure. Many patients with diabetes are discovered through this procedure and get along comfortably and happily under simple treatment.

The treatment of diabetes has become fairly standardized in recent years. The patient with diabetes is to a certain extent like a depancreatized animal. As the result of a disturbance in the function of the pancreas the diabetic individual cannot burn and utilize sugar in the ordinary manner, for the sugar formed in the process of digestion is largely passed off through the urine. In the process of digestion, sugar is formed not only from pure sugar but also from the starchy foods, such as bread and potatoes; to a less extent from the fruits, the green vegetables and the meats, and scarcely at all from the fats, such as cream, butter or olive oil. The fundamental principle of diabetic treatment, therefore, consists in so fitting the diet of each patient to his own case that the diabetic individual does not take in any more sugar than he can utilize without losing some of it in the urine. The sugar-forming elements in the diet must be reduced, and the nonsugar-forming elements in the form of fats must be increased. About two thirds of all diabetic

persons get along well on a mildly restricted diet in which the sugar and starches are diminished and the fat elements are correspondingly increased. In order to feel well, however, they must adhere to the diet that is best suited to their own needs and must keep their urine free from sugar. In about a third of the cases the diabetes is so severe that the patient cannot live comfortably by diet regulation alone. In such cases, insulin is indicated. Insulin is an extraordinarily helpful medicine. It must be taken hypodermically, however, and cannot be taken by mouth or in any other manner than by injection. The person with a severe case of diabetes, therefore, must diet carefully and must also take insulin. He must learn how to use a hypodermic syringe, and he must be familiar with the sensations that develop from insulin overdosage, for if too much insulin is injected the person receiving it may suddenly feel weak and faint, symptoms that are quickly corrected by a little sugar.

The trouble with insulin as originally developed by Banting and Best lay in the fact that its effect lasted for but a short period of time, and as a result many patients had to take several injections a day. Therefore, scarcely had insulin become generally available when investigators all over the world began to work toward discovering a form of insulin which would have a longer duration of action.

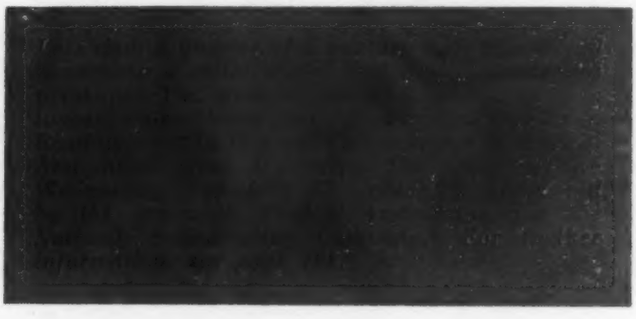
There is now available a slow-acting insulin called protamine zinc insulin. Instead of having an immediate action lasting for a few hours, the effect of this new preparation begins more slowly and does not reach its height for about twenty-four hours after an injection. The development of such a slow-acting insulin has already proved a great boon to many patients, for no one enjoys having to take multiple injections of any substance, day in and day out. With protamine zinc insulin the majority of patients who formerly required two or three injections of the old insulin each day now get along well on a single daily injection of the new substance, and occasionally the severely diabetic persons who required several injections of old insulin a day now get along satisfactorily on two injections of protamine zinc insulin. At times the slow action of protamine zinc insulin must be helped by doses of the rapidly acting old insulin; but the need for this combination, on the whole, is not common.

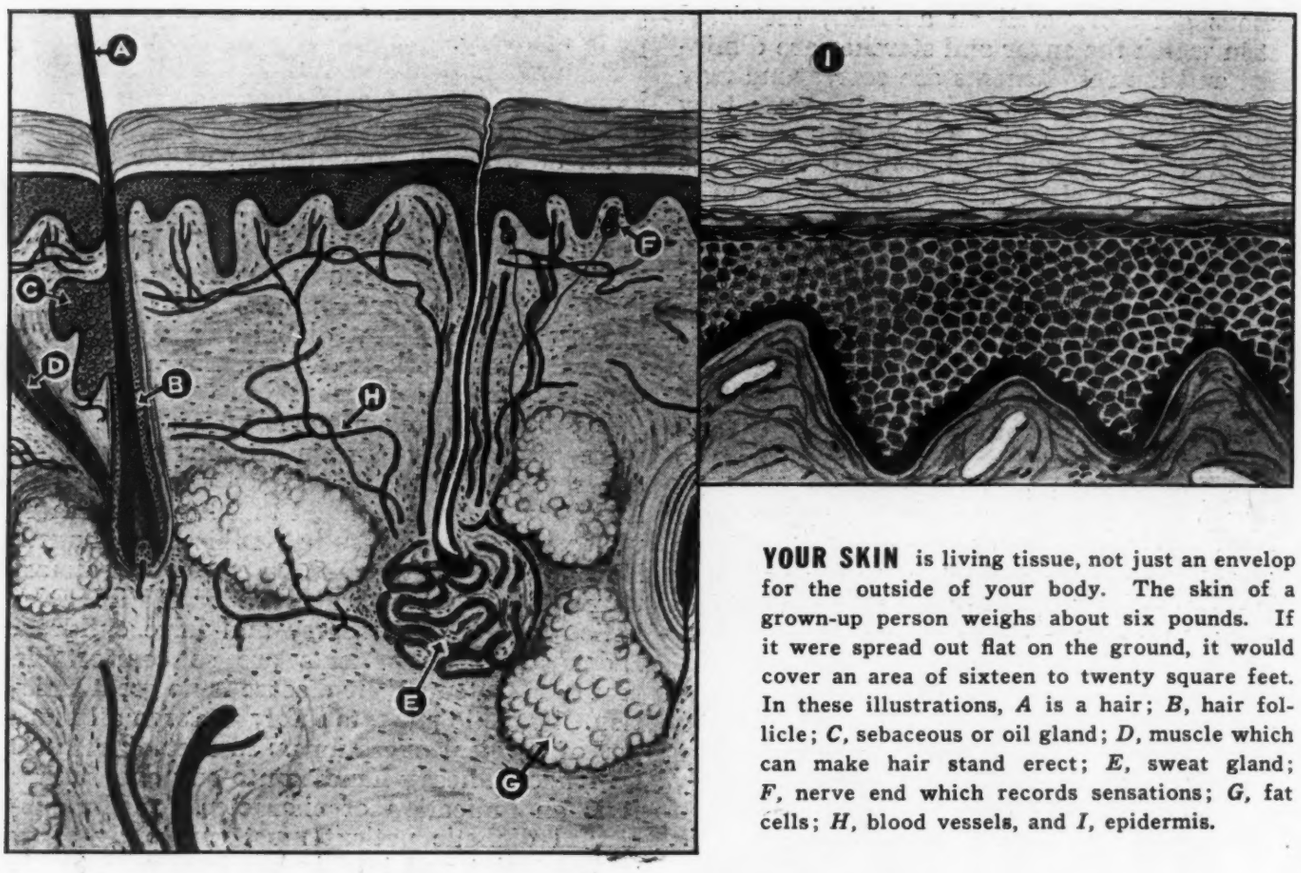
Diabetic coma was formerly the most serious complication of diabetes. Coma is due to poisons from acids formed in the body when sugar no longer is being burned. The diabetic with such acid poisoning first becomes short of breath, then dull and eventually unconscious. The treatment for this condition consists mainly in the free administration of large amounts of fluid and simultaneously large doses of insulin. Under such treatment, consciousness is regained, and gradually the patient makes a complete recovery.

Diabetic patients and their families should know something of acid poisoning for it may develop quickly and unexpectedly. At best it is an unfortunate complication of the disease. If recognized early however and if treated energetically, it now is by no means as dangerous as it was before the discovery of insulin.

The discovery of insulin has made an amazing change in the outlook of patients with diabetes. Before 1922, diabetes was properly regarded as a serious disease. Even the most carefully treated patients were not liable to live very long, and patients with severe cases were perpetually uncomfortable because in order to keep sugar-free they were forced to live on so restricted a diet that life was almost unbearable. With insulin all this has changed. Now young diabetic children can eat an almost unrestricted diet and grow up normally. Diabetic young people marry and have children. Elderly diabetic patients are so comfortable that to all intents their disease is no great affliction. Diabetic patients safely undergo all manner of surgical operations. In fact diabetes is no longer a heavy handicap to any one; rather it is an indication of character, for the successful diabetic patient must constantly show self restraint and intelligence in regard to his method of life; he thereby incidentally sets a good example for the rest of the world.

There are still many problems in connection with diabetes left to be solved. For example, although the treatment of diabetic coma is well understood, there are still too many deaths each year from coma. There still is too much gangrene. Fatalities from these causes should be largely preventable through earlier diagnosis of the underlying condition. There are still many individuals suffering unnecessarily from diabetes because they are reluctant to take insulin. These persons should be helped by popular opinion and the realization that taking insulin is a simple matter. Above all, every one should know that recent advances in our knowledge of diabetes have been remarkable and have so changed the disease that now it no longer is to be regarded as a hopeless, progressive affair but rather as a disturbance of metabolism easily amenable to treatment and offering no great inconvenience to the patient.





YOUR SKIN is living tissue, not just an envelop for the outside of your body. The skin of a grown-up person weighs about six pounds. If it were spread out flat on the ground, it would cover an area of sixteen to twenty square feet. In these illustrations, *A* is a hair; *B*, hair follicle; *C*, sebaceous or oil gland; *D*, muscle which can make hair stand erect; *E*, sweat gland; *F*, nerve end which records sensations; *G*, fat cells; *H*, blood vessels, and *I*, epidermis.

YOUR SKIN

THE blood vessels in the lowest layers of the skin run in waves or little hills. These are responsible for the ridges on the palms of the hands or the tips of the fingers. No two human beings have these ridges in exactly the same form. The skin on the palms of the hands, the soles of the feet, the shoulders and the back of the neck is the thickest of that anywhere on the body. It varies, however, from 2/100 inch to 16/100 inch in thickness from the thinnest to the thickest portions.

The skin is made up of two parts. The outer part, called the epidermis, is composed of cells in several layers. As the cells of the bottom layer multiply and push those above toward the surface, the top cells flatten, become thickened and reach the surface, tightly cemented together in a protective layer. The cells on the surface are lifeless and are constantly being shed. The inner layer of the skin is composed of fibers which form a meshwork support for the blood vessels, the nerves, the glands and the hair.

The skin is an elastic tissue. It can stretch to a limited extent. When it is overstretched the inner layer breaks and heals with a scar. Your skin obtains nourishment from the blood vessels. No food can be put into the skin from the outside. The chief purpose of the skin is protection. It insulates against cold, controls the temperature of the body by radiation, warns against harm by the nerves that it contains, and helps to keep the body free from germs.

To keep the skin healthy, it is necessary to provide it with good nourishment from the blood and lymph vessels, to keep it clean and to avoid the use on the skin of materials that will irritate it.

CHANGES IN THE SKIN of people who are old are due to gradual loss of activity on the part of the glands and of the tissues responsible for immunity to disease.

OLD PEOPLE are less likely to be careful about cleanliness; therefore slight infections occur repeatedly. Since the skin of the aged does not heal as rapidly as that of the young, it is likely to be difficult to keep it in good order. The skin of the aged frequently itches. Repeated scratching breaks the skin and makes possible secondary infection. Wrinkles represent a loss of elasticity of the skin. This elasticity cannot be restored by any kind of a wrinkle remover.

Stephen Deutch

THE BABY'S SKIN is more sensitive than that of the adult. In bathing the child, mild soap, adequate drying and suitable oiling are essential.

Stephen Deutch

MOLES are birthmarks. They are seldom dangerous except when exposed to chronic irritation. Then they should be removed by a physician.

Ewing Galloway

MOST BOYS AND GIRLS have pimples during adolescence. Reasonable cleanliness will prevent permanent harm before the pimples disappear.

Stephen Deutch

SHAVING with sharp razor, cleanliness and adequate facial preparation will not harm the skin.

SKIN—

UNCLEAN BARBERSHOPS and unsanitary shaving may result in infection with pus-forming germs, with ringworm or other disturbances. After shaving, a face lotion reasonably strong in alcohol will prevent infection. Bleeding is best stopped with a clean towel, wet with clean hot water. Adequate preparation of the beard by washing with soap and water and using a proper shaving cream or soap makes shaving easier.

BIRTHMARKS — usually due to abnormalities of blood vessels under the skin, never to prenatal maternal impressions—are best treated in infancy but can be concealed by suitable preparations.

SUPERFLUOUS HAIR is best removed by the use of the electric needle, a few hairs being removed at each treatment.

Stephen Deutch

ORDINARILY the skin does not absorb anything unless it is rubbed in with fat or oil. Baking with beauty clay is of little use.

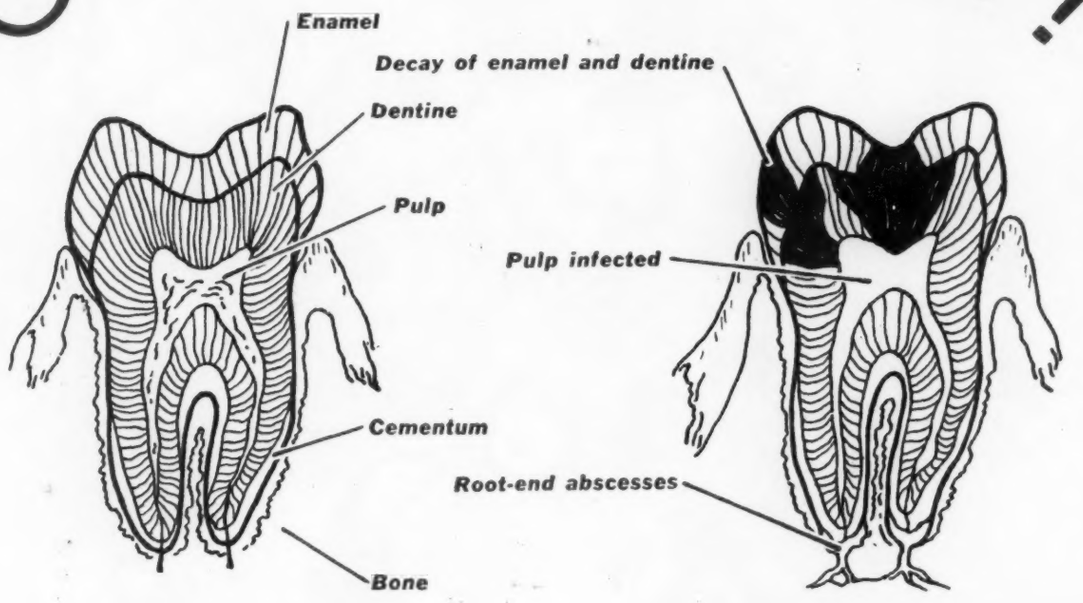
R. I. Nesmith

SUNBATHS in reasonable amounts do no harm to the skin. Blondes must be more careful than brunettes. Burning may be distinctly harmful. Freckles can be prevented by wearing a large hat or using a protective ointment. Repeated burning of the skin by the sun may do permanent harm. Cold and freezing damage the skin by inflammation and irritation. The bather may also protect the skin against chapping by the use of a suitable cream. Only a few cosmetics are needed in most cases. There is seldom any real necessity for innumerable creams alleged to be useful for innumerable occasions. Most of these are just ordinary cold cream with some other ingredient on which the unwarranted claims are based.

Stephen Deutch

NOWADAYS no one considers the use of a reasonable amount of makeup wrong. But makeup which attracts attention or arouses comment because it is used in excess or because it creates an extraordinary appearance not only is in bad taste but may also do harm.

OPEN WIDE!



THE NORMAL TOOTH THE RESULT OF NEGLECT

HARRIET FITZGERALD

has a message of vital importance for the dilatory: Delay may mean decay!

HOW OFTEN have you heard that expression, "Open wide?" Doesn't it sound familiar? It may make you think of your last visit to the dental office. Don't you sometimes wonder why dentists have no more insight than to say, "Open wide," and then ask you, "How long ago was that crown put on?" Yet dentists have a way of doing that very thing. They usually ask questions when it's impossible for you to answer them.

But let me ask the question, "How long ago was it that you last visited your dentist?" Of course, the slogan is, "Visit your dentist at least twice a year." But do you actually practice that? So many things interfere with your good intentions. The bridge club met the last time you had planned to go to the dentist. Then there were those appointments for the children; they needed their teeth fixed. Again there were those rehearsals for Susan's dance recital, and they delayed your appointment. The very week you did plan to go the starter on the car broke; and you knew that there were several other things needed for the car, so rather than incur an additional expense you postponed that dental appointment. Then again, just as you were anticipating making a call to the dental office, some of your relatives phoned that they would be visiting you, and again the dental appointment was postponed. And so it goes.

How about opening wide the next time you are about to brush your teeth and taking a look for yourself at those teeth of yours? That molar way in the back does look peculiar. Could that be a cavity? It doesn't hurt. Sometimes there is a funny sensation when you are eating, but it's not on that side. It's on the upper. That tooth looks black, but there are only certain occasions when you really notice it. It is a bit sensitive. Food doesn't seem to irritate the gums, but they did bleed a little when you brushed your teeth for the past month. Occasionally you have noticed a little lump on your gums which looks like a gum boil. Perhaps you think that it is due to the way you brush your teeth or that it's just a canker sore. We can all figure out ways to justify ourselves for ignoring our ailments.

Did you ever think that nature has ways of warning us of our ailments? A slightly sensitive tooth, a decayed spot, bleeding gums or an inflamed area above a certain tooth all mean that you should consult your dentist and that postponing that visit simply means that you are creating trouble. Once you understand the anatomy of a tooth you can realize the reason for the sensitivity of the teeth.

The white covering on the outside of the tooth is called enamel, and it may be compared to the skin of an apple. When you look at an apple it may appear to be red, green or yellow, but when you cut it in half you soon find that the skin is but a thin covering and that the bulk of the apple is white. So it is with the teeth. The white enamel covering is inorganic in structure and very thin. Under the enamel is a substance known as dentine, which is organic in structure and makes up the bulk of the tooth; this can be compared to the white part of the apple. In the center of the tooth is the pulp, commonly known as the nerve, which can be compared to the seeds of the apple because of its importance. The dentine contains tubules which radiate from the pulp and make the dentine sensitive.

When you have a cavity and the decay is only in the enamel, the tooth is not sensitive, and it is practically impossible for you to know a cavity exists. However, dentists can detect decay even at this early stage because they have small instruments for finding cavities. Often even with these instruments it is impossible to find minute cavities, so the dentist resorts to the x-rays to locate small cavities between the teeth. It is easy enough to find large cavities, but you want your cavities filled before they reach the nerve.

You remember the last time you took Susan to the dentist? You knew that she had four cavities, for you could see them. Then when the dentist examined her he told you there were nine cavities which should be filled. I know just how you felt. You almost thought the dentist was drilling cavities. But he explained that her six year molars, those four permanent teeth which erupted behind the baby teeth, came in with deep occlusal pits, deep grooves on the biting surface, and that it was a simple and painless procedure to fill them when the decay was just in the enamel. You remember Susan said that it didn't hurt. That was because those cavities in the six year molars were only in the enamel. Then you recall how she fussed when he was filling those cavities which were so obvious to you? That was because the decay had reached the dentine where the tooth was exceedingly sensitive. The tooth he had to treat for several months had decay which had reached the pulp, or the nerve, and the tooth died. You recall how discolored it was and how glad you were when that black tooth fell out, three years later. You were fortunate that your dentist was interested in retaining that baby tooth, for if that tooth had been extracted instead of being treated, your child might have had crooked permanent teeth.

And now for your own teeth. You probably haven't any six year molars left in your mouth. Your mother and my mother thought that they were only baby teeth because they came in when we were about 6. When we went to the dentist they were so badly decayed that they had to be extracted, and that is the reason for some of our bridgework. You can't recall that much of your dentistry was painless. You're thinking about that last big inlay you had inserted. That hurt, but that was because you waited so long. Once the decay has pierced the enamel, it next attacks the dentine; and then when you eat something hot or cold, nature warns you that decay has reached the dentine. You should heed nature's warning.

However, many people cannot realize that this has occurred because they do not know the anatomy or structure of a tooth and consequently are not aware of nature's signals. Of course since it isn't a toothache, they hesitate to visit the dentist. You must realize that usually when a tooth aches it's almost too late to save it. The reason for this is that in the center of the tooth is the pulp which contains the nerves, blood vessels and in fact the real life of the tooth. When decay reaches the pulp you are forced to go to the dentist. Perhaps the tooth will have to be extracted; at least it must be treated, and then it is a dead tooth.

Why not "open wide" now and look for yourself? Remember, however, that you cannot see or feel those small cavities in the enamel. So if you want to save those teeth of yours and prevent dental troubles, follow the fundamentals of dental hygiene: correct brushing, twice daily with a small stiff-bristled brush; proper food, including milk and milk products, fruit, vegetables and eggs daily, and regular dental visits.

HOW ABOUT OPENING WIDE THE NEXT TIME YOU HAVE A MIRROR IN YOUR HAND AND TAKING A LOOK AT YOUR TEETH?

"I'm Not Afraid of Cancer!"

THE CARD TABLE was shoved aside. Margaret went into the kitchen to get the tea tray ready; Nan sat down with a new magazine; Caroline picked up her knitting, and I left them and went out into the garden to take a look at Margaret's Michaelmas daisies.

It was late September, and we gardeners were expecting the killing frosts momentarily. Michaelmas daisies might be here today and gone tomorrow—like health or money or even love.

I dropped down on a bench in blissful contentment. An enticing aroma of pickles came from the east. It was blended with the smell of bonfire smoke in a nearby garden and the perfume of lemon verbenas at my feet.

I too had a nice garden. As I sat there in Margaret's, alone for the moment, I fell to thinking about how deeply happy and fortunate I was. No smugness, mind you! Only a deep surging thankfulness to God for everything—for my beloved husband, my health, my Cape Cod cottage with its heirloom furnishings and for that blessing of blessings, that which made me richer than Margaret or Nan or Caroline, my 10 month old baby daughter who was at that moment being safely watched over by a devoted grandmother.

"Mary Faith, aren't you ever coming in? You'll catch cold out there; and besides, tea's ready." Margaret stood impatiently in the doorway. I foresook my dreaming and hurried in.

The four of us, all brides within the past two years, had made it a practice to meet one afternoon a week. If we felt like playing bridge, we played bridge. Some days we talked gardens. More often we discussed antiques and even studied them a little. We scanned the daily paper for notices of auctions, and however far up in the hills they were, we were usually in the front row of bidders, having the time of our lives.

Our friendships dated back to the first grade, so our get-togethers were naturally the most informal in the world. It never mattered a bit if dust stood on the pine table in the hall the day the girls came, or even if the muffins were soggy.

"Mary Faith, I know where you can get the grandfather clock you've been wanting so long," Caroline told me as we settled ourselves around the fire. "It's at Tilly Pearson's. She died a few weeks ago, and her nephew is going to dispose of everything at an auction."

"Tilly Pearson dead!" I gasped. I didn't even know she was ill. She lived halfway up Peck Mountain and used to make braided rugs for Mother. We often visited her when we were children and emptied her cookie jar, but I had lost track of her entirely for ten years or more.

"She had a terrible breast cancer," Caroline said. "And she never told any one about it or even sent for a doctor until a week or so before she died. Then, of course, it was too late to do anything."

"Cancer!" Nan made a grimace. "I'm terrified of it! Let's change the subject. You remember, girls, Mama died of it when I was 8 years old, and I've sometimes wondered if it might be hereditary and if I . . ."

"Stop being morbid," Margaret broke in briskly. "Mary Faith, why don't you go up and see her nephew and try buying the clock at private sale before the auction?"

"I don't want Tilly's clock," I said firmly.

"Why? Not because she had a cancer?" Caroline queried, amazed. Three pairs of eyes were on me. "Surely you don't think cancer's a germ that's catching and might be on the furnishings?"

"No, don't be silly," I told Caroline. Even my thoughts were confused, and if I couldn't think about it clearly, it was small wonder that I couldn't tell them why I didn't want Tilly's beautiful clock, for the like of which I had been searching all the highways and the byways these many years. The reason I instinctively

Though she was "shined on by all the stars," life looked dismal indeed, until courage and intelligence stepped in to make possible this triumphant story

didn't want it, I reasoned later, was because it had ticked away too many precious minutes and days and perhaps years that dear Priscilla Pearson had wasted before seeking medical advice and help. That tick in my little house would haunt me.

Aloud I said to the girls: "The pity of it! That Tilly didn't go to Dr. Robinson the first day she noticed a lump on her breast!"

"What makes you so sure of that?" Nan quizzed. "No one in your family ever had a cancer. What do you know about it?"

"I wrote a thesis on it once," I white-lied.

These three had been my bridesmaids. Margaret and I had lived in the same sorority house at college. I used to talk over my dates with Caroline and Nan and Margaret with far less embarrassment than when my older sister asked me how I was getting along with that redheaded Harwood boy. Since we were little girls with scratches on our knees and elbows we'd been inseparable and knew each other's secrets.

But they didn't know that, under the new green wool dress I was wearing at Margaret's that fall afternoon, high up on my breast was plainly visible a two-inch incision, where nine years ago. . . .

As I walked home through the dusk the realization came over me that I had been too sensi-

"THE PITY OF IT! THAT TILLY DIDN'T GO TO DR. ROBINSON THE FIRST DAY THAT SHE NOTICED A LUMP ON HER BREAST!"

tive about it all and that I might possibly have a message of cheer and comfort to the many who were that very night troubled lest the surgeon didn't get all of it or panic stricken over a newly discovered lump or any of the other symptoms, or to those (and they are legion) who are afraid that some day they will be stricken with cancer.

Come back with me now (though you may not want to—I'm not so keen on it myself) to the year 1928. I was a college junior. I recall a certain April day as if it were only last Monday. I had been shopping and had found what seemed to be the loveliest evening dress imaginable. Last year I came across it in a trunk at home (it was one of those 1928 knee-length models) and was ashamed of myself!

Thrilled with my purchase, I hurried back up the hill for a physiology lecture. The lecture was to be on the subject of cancer and its control, but I wasn't particularly interested. No one near and dear to me was afflicted with the dread disease, and I, being only 20, wouldn't have to worry about it!

The speaker was a distinguished surgeon who had worked harder in the field of cancer control than any other medical man in the state, and I wanted to see what he looked like.

More than once I caught myself failing to pay attention to the lecture and speculating instead about the right shoes and jewelry to complement the dress. But I must have drunk in a little of what the good doctor said—enough, in fact, to turn a critical eye on myself. Standing under the shower that night I noticed for the first time a lump on my breast. It wasn't a large one. It wasn't any bigger than the tip of my little finger.

I remembered (and tried to laugh) that the dean of the medical college, who gave us a course in hygiene when we were freshmen, wouldn't tell us anything about appendicitis. He said that invariably within twenty-four hours after that lecture some one in the class would be on the operating table for an appendectomy. Just to break the jinx, he had taken that particular lecture and put it in the wastebasket.

In the beautiful rush of things, I thought no more of that lump of alien flesh for a week. And then I came down with a sore throat. I was so afraid it would grow worse and land me in the infirmary on the very night I expected to put on that evening dress for the divinest time of all that I went in haste to a doctor.

He was recommended to me by the house mother, and by a strange coincidence I found he was the son of the surgeon who had lectured on cancer. So, after the throat was painted, I thought of the little lump; and remembering my Emerson—"Always do what you are afraid to do"—I screwed up my courage and told him about it.

He congratulated me for coming when it was, as I said, "only as big as the tip of my little finger." But I noticed a frown on his brow when he made the examination. He advised me that if it were merely an inflammation, heat would heal it. If not, I was to come back and "have something done about it."

"Do you recall any recent injury?" he queried. I did. Only a little while before this a basketball had come with stunning force the whole length of the gym to bounce off my chest.

I went out into the night a terrified child. I had never been ill in my life except for the little contagious sicknesses I had brought home from the first and second grade. There was no one with whom I wanted to share this awful secret. My family lived miles away. The doctor hadn't said "cancer," but I knew that's what it must be. I was "shined on by all the stars of God" that night, but they couldn't comfort me. The reign of terror within me had begun.

Why should this awful thing have to happen to *me?* I wanted to scream and stamp my feet and fight. I realize now that my fortunate childhood hadn't given me any experience in taking disaster on the chin. I hadn't been prepared for storm and stress. I had never known suffering and the *(Continued on page 174)*

"Don't Fear Cancer—Fight It!" *That is the message which will be brought over the air in a nationwide broadcast under the auspices of the American Medical Association and the National Broadcasting Company on February 16. Into America's schools and homes will go the word that cancer in its early stages is curable, a truth which has been incontrovertibly established in 25,000 and more cases in which patients have remained alive for five, ten or fifteen years after removal of proved cancer.*

"Don't Fear Cancer—Fight It!" *And fight those insidious factors which raise the cancer mortality rates to unnecessarily high levels; for death from this disease may be the result of negligence, ignorance, well meant but worthless "friendly" advice, misguided enthusiasm for a "sure cure," superstition, fear, or a blind faith in those human cancers, the quacks, whose corruptness brings destruction.*

"Don't Fear Cancer—Fight It!" *Guard against it by periodic health examinations. And, if you suspect that you have it, don't hide it, but go at once to a reputable physician, and add your name to that steadily growing list of more than 25,000 cured.*

The Story of Human Energies

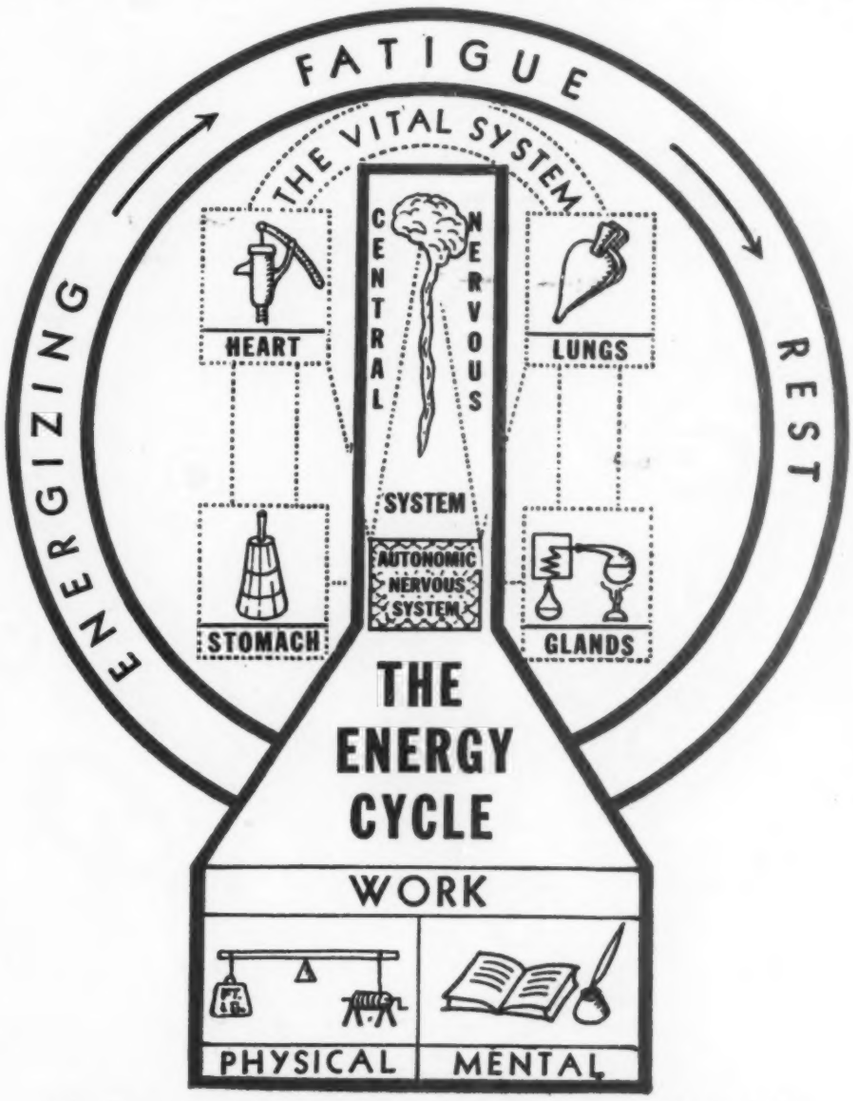
I. THE POWER PLANT

The kind of motor you have inside you determines the performance of your power plant. Use it, but don't abuse it,
says JOSEPH JASTROW

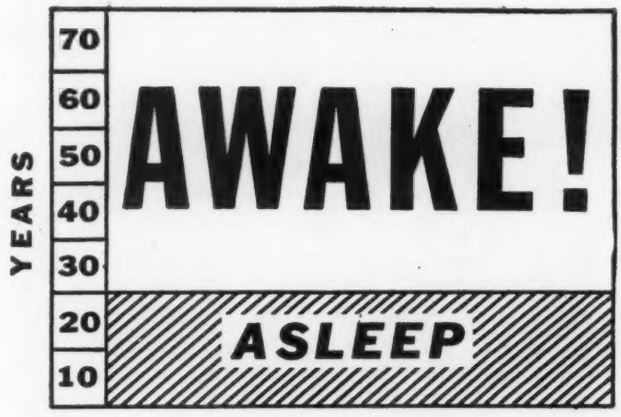
THE COMMAND to "Wake up and live!" sounds a bugle call to action; but it makes one big assumption: that the energy is there to be aroused. And the supply of energy is precisely the nub of the matter. It is well enough to spend all you have on occasion, but how much have you? It may be more than you suppose or less than you realize. The kind of motor you have inside you determines the performance of your power plant. You can no more exchange it for a better one than you can your heart or your lungs. For many persons and conditions the wiser counsel would be "Let down and rest!" The sanatoriums are full of energetic people who have overdrawn their energy account; and there are others so immune to fatigue that they can afford to go all the time at top speed.

How to budget energy wisely is everybody's business; in what energy bracket you belong is the primary concern. The great majority are neither paupers nor plutocrats of energy; they have about the ordinary, normal supply. Unlike a bank account, energy is an elastic depository; it stretches and shrinks. It is good policy to learn the capacity of your power plant and how to run it. There is one great consolation: Of all engines, the human is the one in which the output depends most on how it is run. Run it right, and you'll live right. That you can have orchids on any financial budget is a pleasant myth, and strength for any ambition on any energy budget a vain belief.

In view of its key position in the arch of life, the human power plant has received scant attention. Nature drew its plans and specifications; we must accept them. It is a high powered, sensitive, highly complicated plant, like nothing else in the world. What we know about it is derived from observations of the energies of physiologists and psychologists, working under difficulties. For no one has ever inspected the plant and observed it at work, for all the certainty that it is there and for all our intimate experience with its working. We know when we feel energetic or listless; we have daily tests of our working capacity. What appears in the body under dissection is deader than a blueprint and gives slight clue to how it worked when alive. The story must be put



THE HUMAN BODY IS A TWENTY-FOUR HOUR FACTORY IN WHICH THE LIFE-SUSTAINING, OR VITAL, WORK IS RUN BY THE AUTONOMIC NERVOUS SYSTEM (DOTTED LINE), WHILE THE CENTRAL NERVOUS SYSTEM (SOLID LINE) DIRECTS THE EXPENDITURE OF ENERGY FOR PHYSICAL AND MENTAL WORK.



IF YOU LIVE TO THE AGE OF SEVENTY YOU WILL, LIKE RIP VAN WINKLE, HAVE SPENT A SUM OF TWENTY YEARS ASLEEP.

together from a study of the output of performance and from the conditions under which the body does its job. That vital tale is the subject of the present article and of the one to follow.

The story of energy is a three-in-one tale: first, the supply of energy; second, fatigue, when energy wanes and fails, and third, rest, by which energy is restored, the most mysterious process of all. Your energy system is part of your total endowment; it is the motor for the rest. There are really four of you housed in the same body: the chemical man, the energetic man, the emotional man and the intellectual man. The fourfold man makes a pyramid, with the chemical man at the base. In breathing, pulsating, secreting and feeding, the body chemistry serves the energy cycle. Stirred by emotional urges, you feel like doing things. Then you use your mind to plan and do them. The state of the chemical and the energetic man underlies that of the emotional and intellectual man.

The all embracing law of energy is that it runs in cycles. Life is a series of rhythms. The energy cycle presents the three phases of energizing, fatigue and rest. You get up and go to work; you get tired; you rest, recuperate, sleep it off and start again. Meanwhile, once started the biochemical laboratory inside you goes ceaselessly from the first breath to the last. The lung-bellows, the heart-pump and the glandular secretions go on continuously, the pace somewhat lowered in sleep. They do not get tired, for their rest periods are provided in their natural rhythms. The nervous system, which is man's glory and worry, becomes tired, desperately tired; and its recuperation, along with the restoration by food, sets the animal and the human program. Life at the minimum is bed and board. The Sabbath is a human institution; the prolonged unconscious condition of sleep is nature's decree. The law of the energy cycle is supreme. It proclaims: You may live actively for only brief stretches at a time. Stop, rest and recover—or under you go! A continuous performance all day and all night, year in and year out, a world without rest, is beyond our imagination. Even the plants of the earth have their active springtime and their winter rest. Hibernation is another and peculiar solution of the activity-torpidity cycle; we may rejoice that we are not subject to it. It would bring civilization to a standstill if we were all laid up for the winter. Instead we take the animal's furs, invent central heating and go ahead at full steam the year around.

Life, run on the schedule of an energy cycle, has its ups and downs, thrills and routines, periods and occasions, acts and scenes and curtains. Everything we do must be adjusted to the rhythms of human energy. Endurance tests and marathons show exceptional stunts of energy but offer no models for imitation; they are confined to monotonous tasks. In order to do our best at the top of our curve of energy, we must consent to be at far less than our best for long stretches. Though we have no choice in the matter, we may concede the benefit to the play that players and audience get tired. There is always another day, another play, another start, another chance! The cycle of activity and rest has many compensations, among them the boon of anesthetics, a gift of the chemical man. Some chemical compounds, such as morphine and ether, act directly on the sleep mechanism. Had nature not so made organisms that they need sleep to dissolve fatigue, there would be no painless surgical interludes.

In the core of your brain is a mechanism that sets your program from the cradle to the grave. Beginning as an infant sleeping twenty hours—for just staying awake is fatiguing to the sensitive infant's brain—you gradually extended your energy cycle until it reached a daily eight hour working, eight hour sleeping, eight hour recreating schedule. Day in and day out, with allowance for emergencies and holidays, that portion of the brain has served you as a monitor of the energy cycle.

Conditioning the energy cycle is a chemical traffic system called metabolism. The feelings of energy and fatigue set up the go, caution and stop signs. The body needs more than rest to keep it going; it also needs food. Stoking goes on to supply nourishment; food is metabolized into energy.

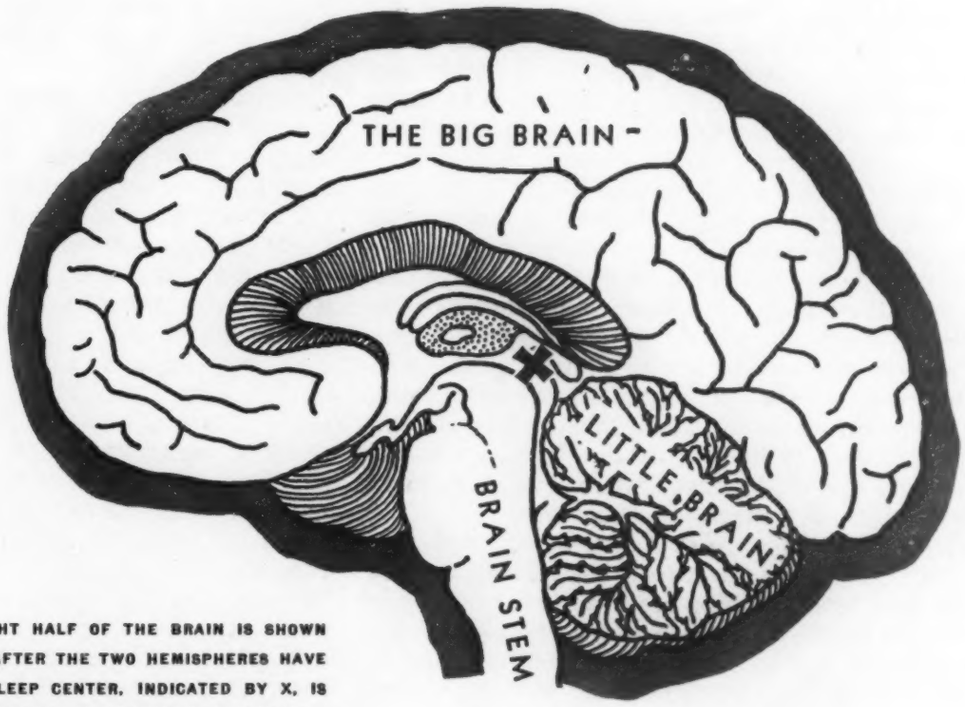
A good night's rest, with breakfast for a starter, and we are off for the day's work. The muscles perform the operations; but the actual worker behind the muscles is the nervous system. The nervous system earns the wage that feeds the stomach. The nervous system requires frequent spells of relief, rest periods and a prolonged unconscious siesta. You may not like

this decree of nature. Children don't like to go to bed so long as there is any fun in staying up; youth would turn night into day and still be fit for the day's work. But nature says "No" alike to night clubs and to midnight oil in excess. It seems terribly inefficient to have to waste so many precious hours in a benign stupor. If you live to be 70, like Rip van Winkle you will have spent a total of more than twenty years asleep, only distributed on a different time-table.

Fatigue is the king-pin in the machinery. When the energy system goes wrong, there is incapacitating fatigue. Tired people are unhappy, and tired people fail. The menace of fatigue is as great as that of famine or war. Fatigue is a signal that arises from the law of animal life, which requires the alternation of activity and rest. There are diurnal creatures, day active and night resting, and nocturnal creatures, night active and day resting. Stimulated by his own inventiveness, man aspires to be both. Birds let down at dusk, rest and roost, and become active with the dawn. The more complicated and higher up in the animal scale the organism, the more imperative is rest and the more devastating is fatigue. Becoming complicatedly tired is one of the many liabilities of being a human being. The living machine runs down and must take time off to wind itself up; for that seemingly impossible feat is what it actually and daily does.

What makes one tired? Expending energy, going places, doing things and thinking and worrying about them. Heavy work is done by big muscles, and lighter, delicate work by smaller ones. Keeping either going steadily entails fatigue. The fuel for muscular work is glycogen, a chemical substance produced in the muscles and in the liver as a reserve tank; the material is derived from the blood stream. To prevent the machine from running too low in gas and exhausting the liver-tank, the consumption of glycogen in work deposits by-products —carbon dioxide and lactic acid—which act as brakes and clog the works; normally they are eliminated by various avenues of excretion. Excess of these fatigue poisons may induce exhaustion and collapse. That is one aspect of the energy cycle but far from the only one.

The work of a factory-made machine is measured in units of foot pounds or horse power. Man power is partly that and mostly not. Much of the work of a nature-made neuromuscular machine is highly complex. It is true that muscles tire and that nerve fibers do not, any more than do the wires of an electric circuit over which the current runs. But it is still truer



THIS VIEW OF THE RIGHT HALF OF THE BRAIN IS SHOWN FROM THE INNER SIDE AFTER THE TWO HEMISPHERES HAVE BEEN SEVERED. THE SLEEP CENTER, INDICATED BY X, IS SITUATED DEEP IN THE CENTER OF THE BRAIN AND IS INTIMATELY CONNECTED WITH AND INFLUENCES ALL PORTIONS OF THE NERVOUS SYSTEM. ONE OF ITS MANY FUNCTIONS INITIATES THE UNMISTAKABLE SIGN OF SLEEPINESS—YAWNING.

that the entire neuromuscular set-up is the focus of fatigue; the nerve battery runs down. The muscles that get tired are those controlled by the will. The will belongs to the emotional and the intellectual man. Will may involve effort and strain, which is a pattern of energy output, rapidly inducing fatigue. You can keep up light routine work for several hours without tiring and yet be "all in" after an hour at a strenuous or difficult job.

Under this dispensation you keep on willing, even if gradually unwilling—chopping wood, shoveling dirt, riveting girders, making entries, waiting on customers, giving orders, dictating letters, writing a chapter in a novel or a treatise, all sending impulses to muscles constantly supported by chemical processes, until the whistle blows. But the internal fatigue signal may have been given long before; at the end of a long strenuous day the hardest willing you have to do is willing to keep awake. Not to heed the warning may be courting disaster.

We often learn more from disease than from health. It is when the energy machine breaks down that we become impressed with our dependence on its right working. A drastic example is the strange and trying malady called neurasthenia or, popularly, nervous breakdown. It required clinical genius to recognize that this strange assemblage of symptoms derives from fatigue. The trying pace of American life put it on the map at a period which, in contrast with the mad rush of today, seems leisurely and demure. The originator of the term was Dr. George M. Beard of New York, who awakened his generation to the prevalence of "American nervousness" and spoke of it as "the most frequent, most interesting and most neglected nervous disorder of modern times."

A neurosis is the doctor's name for a disorder of the nervous system. Neurasthenia is a fatigue neurosis. The symptoms of neurasthenia demonstrate the great influence of the state of the energy system on the general condition of body and mind. For the neurasthenic person is not merely tired; his misery is manifold. He has such a long string of complaints in every organ of his body that among doctors his narrative is known as the "organ recital." One suspects that neurasthenia was devised by a devil with a neurologic education.

The fatigue system is a sort of solar plexus; when you are hit there you feel it everywhere. To begin with, it hits the emotional man and does so by filling him with a headful and a heartful of fears. Fears grow strong as energies grow weak. A rested nervous system is courageous, ready to face things; a tired nervous system is cowardly and apprehensive. A rested nervous system is confident and steady; a tired nervous system is hesitant and shaky. A tired nervous system is depressed, low in mind; a rested nervous system sings a merry tune. After a good night's rest, a man warbles in his morning tub, and an infant, waking from a nap, croons. A tired nervous system wails a sad plaint, with the zest of living gone out of it. Chronic fatigue makes every effort a pang. And there are other and more subtle ways in which fatigue induces all sorts of queer feelings. How often in answer to the question, "What's the matter with you?" does one hear, "Oh, nothing; I'm just tired." "Just tired" is a long story.

The effects of fatigue on the intellectual man are equally familiar. When tired, you can't keep the attention on the job in hand; the printed page conveys no meaning; the right words won't come when you write or talk, and you can't follow the conversation. Equally you can't make decisions, judge things as wise or foolish or determine whether to say "yes" or "no." It's always good advice when troubled or uncertain "to sleep on it," to tackle the problem with a rested mind. All these are phases of mental fatigue, to be considered later. Neurasthenia is far more mental fatigue than physical. What it can do to you is best illustrated by a few thumbnail sketches.

I cite the case of a remarkable man of many talents, Nathaniel Shaler, distinguished Harvard geologist of a generation ago. Seated next to him at a luncheon in his honor, I noted that his face suddenly assumed a rigid and agonized expression. A moment later, resuming his luncheon, he said, "I just had one of my attacks. I've had them for years. Though I'm a poor man, I would give a thousand dollars to be spared one such moment of agony." The sensation may be described as a brainquake, accompanied by confusion and an intense feeling that only the end of all things could be so terrifying. That is a neurasthenic scar.

There is a vivid account by an officer in the U. S. Army, returning from the World War, physically unscathed but a neurasthenic wreck, a trembling bundle of vague fears. Reaching Washington, he was barely able to apply for his discharge papers. Locking himself in his office in the War Building, he wept like a child at sheer terror of the thought of having to enter a train or make any of the ordinary decisions of the day. Yet he wore decorations for distinguished valor on his uniform. It required two years of sheltered life in a tropical climate to recover his shattered nerves, shattered by fatigue, not by shells. War brought on or brought out his neurasthenia.

Typical is the case of a librarian exhausted by every effort—a mental invalid depending on others for every need. Subject to a sudden feeling of faintness and of impending disaster, he always carried a raw egg and quickly swallowed it to dispel the faintness. It took five years of wise training by an expert in neurasthenia to bring him *(Continued on page 157)*

SKIING

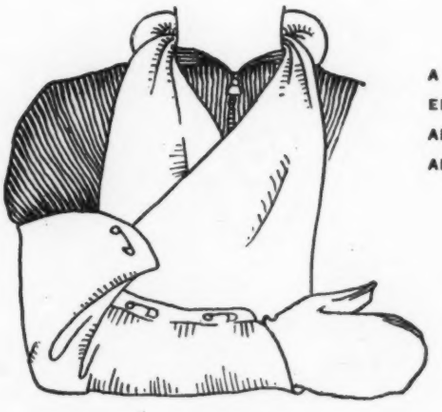
Acme

By Charles C. Lund

Part 2 FIRST AID FOR FRACTURES

IF POSSIBLE apply your first aid splinting to fractures before moving the patient at all. "Splint 'em where they lie." Every move without splinting may cause irreparable further damage to the limb.

Fractures, sprains and dislocations of the arm, forearm and collar bone need no splinting as part of the first aid. A small pad should be placed in the armpit; the arm should then be put in a sling, and a tight swathe wrapped around the chest over the sling. For an improvised sling, take a man's shirt, and tie the sleeves loosely behind the back of the neck. Hold the arm across the body with the elbow at a right angle. Fold the shirt-tail up from behind and below the forearm, pinning it to the shirt above. Notice that the shirt also folds around the lower end of the upper arm. This increases the steadying power of the sling. A scarf or another shirt should then be pinned around the chest outside the arm.



A MAN'S SHIRT, PROPERLY FOLDED, TIED AND PINNED, MAKES AN IMPROVISED SLING.

A tight chest swathe is the proper treatment for fractured ribs. This must be pinned as tightly as possible.

Sprained knees and ankles are the commonest of skiing injuries and are usually not very severe. If after the first ten minutes the pain remains severe, a bandage should be firmly but not tightly applied over the shoe in the case of the ankle and over the trousers in the case of the knee. Too tight a bandage will cut off the circulation and lead to rapid freezing of the foot. As the proper tightness of such a bandage cannot be shown in any illustration or otherwise described, the methods to use must be learned from a doctor before being tried on a skier. In the case of all the injuries down to this point, after the first spasm of pain the patient can usually walk or ski out from many skiing grounds. If this does not cause much pain, there is little danger of seriously increasing an injury.

Fractured legs and thighs should always be splinted even before the patient is moved the short distance necessary to put him on a toboggan. While the splint is being made or brought, the patient will be more comfortable if a steady, firm pull is applied to the foot.

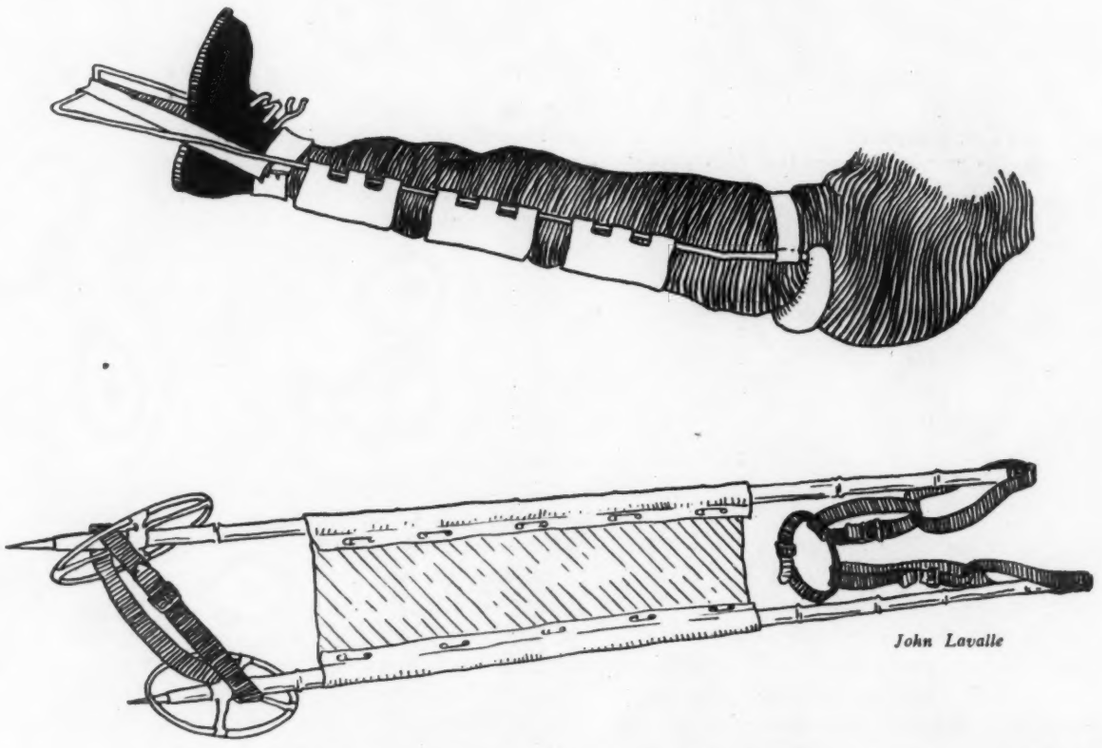
Hold the foot in one hand, and support the calf in the other. In this position the pull is produced without muscular action of the legs or back merely by rocking back on the feet and allowing the body weight to do the work. This position can be held longer with less effort than any other.

The half-ring emergency Thomas splint is much the best splint for any fracture of the leg occurring above the ankle joint. This splint has not yet been made generally available on ski trails, but efforts should be made to have it placed on ski first aid toboggans as part of their standard equipment. To apply it, the jointed padded half ring at the upper end is turned so that when the splint is placed under the leg the longer side of the splint will be on the outside. The ring is placed so that it lies against the ischium (the bone you sit on in the fold of the buttock). The wide ankle strap is then put on snugly but not tightly over the upper part of the shoe, and the long strap that

extends over the lower end of the frame from one side of the ankle cuff to the other is pulled tight. This strap should be adjusted on the ankle to produce a steady pull of about 20 pounds with a corresponding thrust against the ischium. The strap across the front of the upper part of the thigh is then applied loosely. The lower end of the splint should rest on something so that nothing touches the heel, and nothing but the splint's own slings support the leg. One important feature of this splint is that only three buckles have to be adjusted, and therefore it can be applied in less than five minutes.

If this splint is not available, a substitute for it may be made with two intact ski poles, an undershirt, ten safety pins and four straps. (Two straps not illustrated will be explained later.) The pointed ends of the poles go upward. The point of the ski pole that is on the inside of the leg should be covered by a thermos bottle cork or a leather glove, because this point must lie in the fold between the buttocks. The strap shown going from above the basket on the inside pole to below the outside basket does not extend around the leg. This strap fits against the ischium as the half ring does with the metal Thomas splint. Before putting the splint on, a heavy flannel shirt should be wound around the upper thigh. In front of the thigh two straps should be placed from one basket edge to the other and tied firmly across the shirt. A sock should be rolled around the ankle under the ankle cuff. The straps that connect the ankle cuff to the handle straps of the ski pole must be hooked to the cuff near the back of the ankle on each side. Bildstein or Amstutz springs may be used for these straps and are really better than leather or cord, as they tend to keep a more even pull on the leg. As in the case of the Thomas splint, an attempt should be made to secure about twenty pounds of pull on the ankle and transfer it to the body. This splint takes longer to adjust than does the Thomas splint; but if it is understood, and especially if one has practiced in advance how to put it together, it should not take longer than less efficient first aid splints.

For fractures of the spine and neck prepare a toboggan from skis, and pad it well with balsam boughs and clothing. Handle the patient gently. If there are less than five persons who can help, move the injured person only by rolling. *Avoid at all costs forward bending of the neck or spine.* Then strap his legs, chest, belly and head to the toboggan. If the fracture is in the neck, try to support the head in moving him so that it does not bend or twist at all in relation to his body. In achieving this a fairly strong pull in line with the axis of his spine should be applied. Put plenty of padding under and around the neck as you place him on the toboggan. Having splinted the fractured spine or neck in this way, put the improvised toboggan on top of another toboggan, or litter, and fasten the two so the top one will not slip off.



John Lavalle

BECAUSE FRACTURED LEGS AND THIGHS SHOULD ALWAYS BE SPLINTED EVEN BEFORE THE PERSON IS MOVED TO A TOBOGGAN, THE THOMAS SPLINT ABOVE SHOULD BE INCLUDED IN FIRST AID EQUIPMENT. FAILING THIS, ONE CAN BE DEVISED FROM SKI TRAPPINGS, AS BELOW.

The upper one will then act as a splint, and the under one will absorb the strains from uneven ground without transmitting them to the patient.

Unconscious patients and those with internal injuries need no splinting unless there are associated back or leg injuries. The patients must be well wrapped and strapped to a toboggan and taken out. Besides keeping them warm there is nothing you can do.

A ski tip, branch or ski pole stuck deeply into a person may cause a very serious situation. Do not thoughtlessly pull it out. If the outside end is short, never pull it out. Under some conditions the stick may act as a cork and may seal or partially seal its own damage. If possible to do so without great expense of time and without motion to its inner end, cut it off fairly short. Put a dressing over the wound, and get the patient out as fast as possible.

Some means must be found to strap the patient to the toboggan or litter to prevent his sliding off, which is both painful and harmful. Toboggans are flexible, and the flexing motions may be bad for the patient. Of course, you have to use what is available; but a suitable toboggan should be stiffened by having two-by-fours bolted on each side. When a litter is necessary to carry a patient over bare ground never make one by suspending a blanket between poles. This will always sag and may seriously harm the patient. Use an improvised ski toboggan as a litter instead. When you come to the highway or railroad put the patient, toboggan, litter, splints and all on the truck, ambulance or car. Transfer him in the same way right into the hospital. On arrival of the doctor the first aid man's responsibilities are over.

On some days the more popular trails and open slopes are becoming crowded. There is every indication that they will become more so. Many skiing accidents could be avoided if skiers would at all times remember the rules of good sportsmanship. Skiers should conduct themselves with due regard to others so that all may enjoy the sport together. When a party is going up hill don't spread all over the trail so that the skiers coming down have to break their run with a needless stop. On the other hand, coming down hill don't run fast around blind corners yelling "Track" and expecting everybody to jump. Don't go whizzing by as close as possible to a slower skier. Above all don't run full speed right up to a group and then try to stop with a snappy turn. Even with the best of us, our snappy turns occasionally fail to come off, and if the price of your momentary exhibition should be somebody's broken leg, you would be unhappy for a long time.

Skiers should always travel in bunches, so that a single party should be self contained, so far as possible, with respect to any necessary first aid. Often the good Samaritan has had to give up a full day's skiing to help out a stranger who has been hurt. A result of this has been that at times many skiers have failed to aid a seriously injured person. While we all have a natural desire to help the man who is down, it is not surprising that men have little sympathy with others who are suffering from results of a particularly foolish exhibition.

Parties should also keep together. A party of friends a mile or two away is of no help to the isolated individual, if he needs help. Even the comparatively low and small Mount Washington has needlessly claimed many lives in the last hundred years and will claim many more unless people learn that its upper reaches are not suitable pastures for casual walks of untrained, unequipped persons. Skiers are every year invading more and more of the higher Rocky and Cascade peaks, where mountaineering knowledge is essential to avoid serious tragedies from sudden changes in the weather or from avalanches. We may expect, however, that the participation in this exhilarating, healthy sport will continue to grow and that the time may come when practically the whole population will take to the mountains each week-end. This trend is true now all through Sweden and Norway and is rapidly approaching in parts of Switzerland, in the cities of eastern Canada, and in such towns as Hanover, N. H.

[NOTE.—No short article can deal adequately with the details of first aid problems. For those readers who want more information the following books are recommended: The American Red Cross First Aid Text Book may be bought from any branch of the Red Cross for 60 cents. This gives particulars for handling all kinds of accidents and injuries but does not take up the particular problems of winter sports. It is the standard American text on the subject. A new edition was published in September 1937.

For those who read German an excellent book of the same size is "Unfallhilfe und Hygiene beim Wintersport," by Dr. Paul Gut. The publisher is the Interverband für Skilauf (Swiss Association of Ski Clubs), and it is sold by the Buchdrückerei Manatschal Ebner & Cie, A.-G., St. Moritz, Switzerland. Any bookseller can secure this for you at a price of less than $2. It is well illustrated and quite useful. It does not, however, give consideration to traction in the handling of fractures but illustrates and insists on the best possible nontraction splinting for them. It also has good sections on training and exercises for skiers, on the avoidance of avalanche accidents and on rescue work in connection with them. It has seventy-seven photographs and seven drawings.

A further useful and highly scientific book on the causes and avoidance of avalanches is "Snow Structure and Ski Fields" by Gerald Seligman. This book has 400 photographs and diagrams. It is published by The Macmillan Company and sells for $9.

The substance of the present article is available in booklet form under the title of "Do's and Don'ts for Safe Skiing." It is published by the Boston and Maine Railroad and may be purchased at 10 cents a copy from The Armstrong Company, North Station, Boston, Mass.]

Do You SNORE?

Well wishers will offer the snorer many "homemade" recipes, but if he is wise he'll follow the advice of

MARGARET McEACHERN

DON'T STOP reading just because it's all in the first sentence that this is an article about snoring.

Too long has this subject been avoided as a topic too delicate for discussion. This being a day of exposés, it seems appropriate that the veil of secrecy be lifted from this national menace, with the hope that it may result in better sleep for millions of innocent victims.

Fortunate indeed is the family that does not harbor at least one snorer. Cold, hard statistics prove that the Astorbilts of Fifth Avenue and the Reillys down by the railroad track both suffer by the nocturnal rumblings of a member of the family.

Tests of a snorer in good form have been taken with an audiometer. The machine proved that his nasal calisthenics hit 40 decibels, the equivalent of a noisy office or automobile. This means that the family of a snorer must try to catch a few winks in a house that has the soothing, restful atmosphere of a thriving business concern.

Snoring is insidious in many ways. It disturbs the sleep of those exposed to it and lessens the rest of the offender. Only one out of ten snorers knows he has the habit, although often he is awakened by the thunder of his own rumblings. And if the snorer faintly suspects his condition, he will deny it loudly. It does little good to drop sly hints about "Sleep quietly and the world sleeps with you; snore and you snore alone." And there is no sense in laughing it off lightly with a "Well, *somebody* was sawing wood last night."

It is no laughing matter for a family to be awakened at 3 o'clock in the morning by house-shaking reverberations like unto the rumblings of an angry Aetna. Yet, for some unfathomable reason, a polite cloud of silence has hung

over this subject. Women resignedly have "put up" with nights of restless sleep caused by snores. The guilty party didn't suspect or wouldn't admit his habit; the rest of the family were either too disgusted to discuss it or "hated to hurt his feelings." The snorer, however, may suspect his condition if he wakes up in the morning with a dry mouth, a tongue like leather and a dark brown taste. This is due to the drying of the secretions of the mouth by mouth breathing.

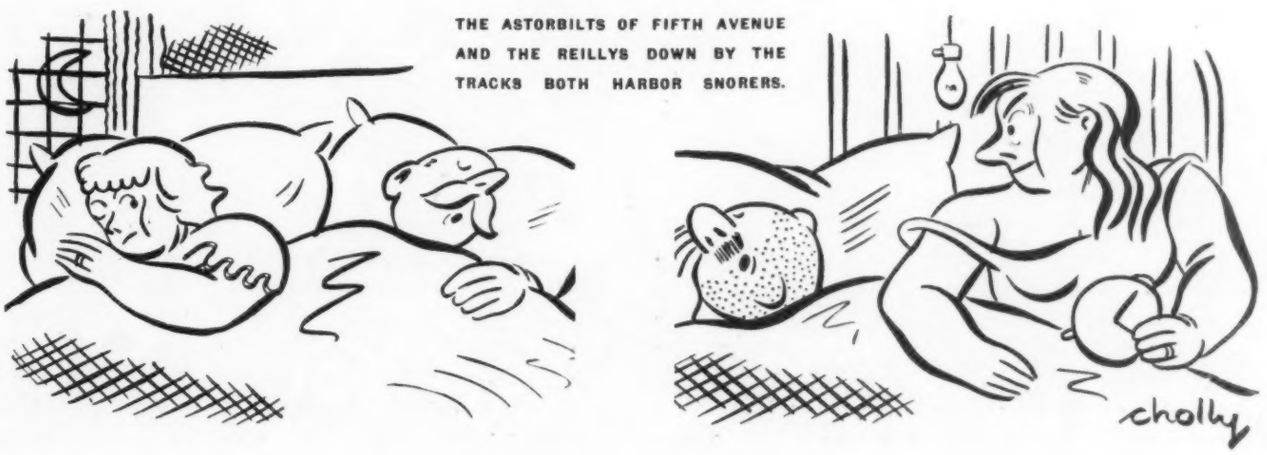
There is little in medical literature about snoring; nor have poets become effusive over it. Briefly, and without embroidery, snoring is breathing with a peculiar rough noise in the sleep, which is due to vibrations of the soft palate and uvula. It is a hoarse, labored respiration produced by deep inspiration and expiration through the nose and open mouth. The normal sleeper, on the other hand, keeps his mouth closed, breathes naturally through the nostrils and prevents vibration of the loose tissues of the throat.

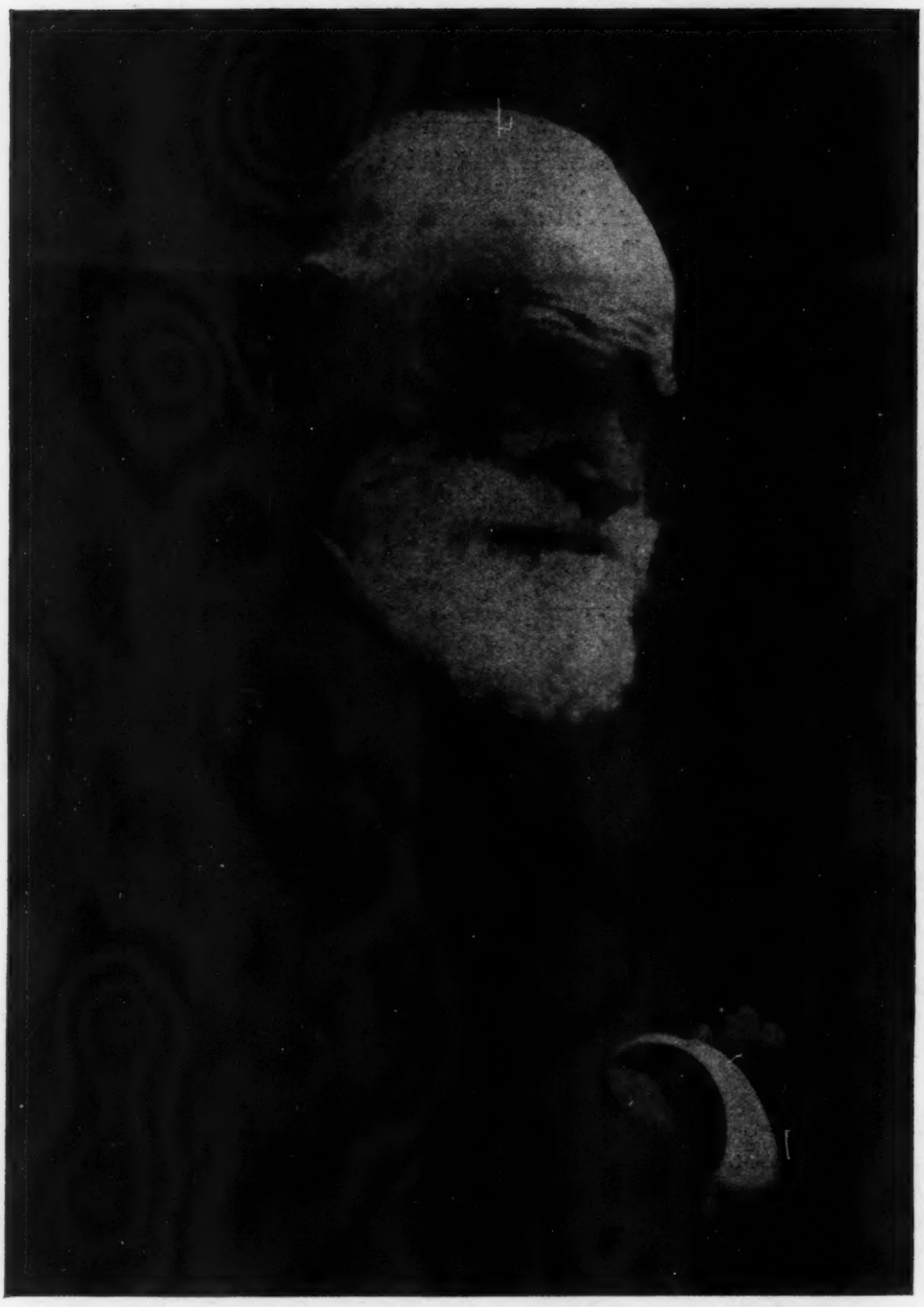
According to conservative estimates, one out of every eight persons snores more or less regularly. No doubt every person snores occasionally, but the one out of eight is the person to look out for. It has been established that there are snore cycles in the life of the average person. Infants snore commonly. Between the ages of 10 and 30 years, snoring is rare. After 30 it increases. This may be because at this age period, people become a little careless about their physical well being. And unless the physical condition which is causing the snoring is corrected, it will increase with the passing of each ten years.

It is true that there are more men snorers than women, but the women are just as noisy and thorough in their performance. Inside workers and those who do not exercise are more inclined to snore than outdoor workers. Business men who are confirmed snorers often stop when on hunting or fishing trips which keep them outdoors during the day.

There are many causes of snoring. The sleeper may have his nose buried in the pillow so that he has to breathe through his mouth. Or he may be lying on his back, and the jaw muscles may let the mouth drop open. Generally, snoring indicates disturbances in the breathing apparatus, especially obstruction in the nose that prevents him from sleeping with his mouth closed. The obstruction may be a result of polypi, tumor growths, enlarged turbinates, bony deformities, sinus infection or a deviated septum which encroaches on the air space of one nostril. Chronic inflammation of the nasal linings also may cause an enlargement of the tissues sufficient to obstruct the nose. And, strange but true, certain foods may cause a person to snore. Many men and women are sensitive to certain proteins. If they eat tomatoes, for instance, the mucous membranes of the nose have a tendency to accumulate secretions. Some authorities believe that snoring has increased in recent years because cigaret smoking has been accepted generally and because more persons are working indoors. Without doubt, it does increase in the winter as the result of colds and overheated sleeping rooms.

But what to do about snoring? Aside from the esthetic and social aspects of snoring, the medical side is of great importance. If there is a snorer in the family, he should be escorted gently but firmly to the family doctor. In children, snoring commonly is an indication of enlarged adenoids. In most cases it results from a physical defect which can be corrected, making for better rest for the snorer and a happier home for the rest of the household. Well wishers will offer many "homemade" recipes for curing a snorer. Most of them are ingenious contraptions to keep the person from sleeping on his back. The favorite is to sew a pocket squarely in the middle of the back of the sleeping garment and put inside it something comfortable like a baseball, a spool or a pair of tennis balls. Such appliances undoubtedly will keep the snorer from sleeping on his back, but it is much easier and much more modern to stop in at the doctor's office and let him take care of the trouble.





BY HIS EXPERIMENTS WITH DOGS, IVAN PAVLOV PROVED THAT THE ACTIVITIES OF THE HUMAN BODY ARE GOVERNED BY TWO "STOP" AND "GO" FORCES, INHIBITION AND EXCITATION, MUCH AS THE TRAFFIC IN A MODERN CITY IS REGULATED.

Old Dogs and New Tricks

The Story of Ivan Pavlov by LEONA BAUMGARTNER

ON FEB. 27, 1936, death came to Ivan Pavlov, known as "the one free man in Russia." He dared to call the Bolshevist revolution "the most deplorable event in history" and in turn was given a government grant of $500,000 for his work. In the bloody days of October 1917 he stayed quietly in his laboratory and was so little disturbed by the stirring events of the time that when one of his assistants arrived late because the revolution had stopped all traffic, Pavlov grumbled, "What difference does a revolution make when you have work in the laboratory?" He treated the government with disdain when so inclined, and its officials presented him with one of the few privately owned motor cars in the Soviet state. He was

allowed to speak and act as he pleased, even if his remarks were directed personally against the very leaders who protected him. In 1921, Lenin influenced the local council to pass an official decree requiring the Petrograd Soviet to do their best to favor Pavlov's work; and in 1935, Stalin opened the long closed palace of the czars to entertain at government expense the 1,600 scientists who had come to the International Physiological Congress to see Pavlov and his dogs. The official dinner was served by 180 waiters; it consisted of eight courses and lasted six hours. All this for a man who openly criticized the state.

Such a paradoxical happening under as rigid a system as the U.S.S.R. is no mere trick of fate. Pavlov, though he represented the Old Deal, was tolerated by the leaders of the Russian New Deal solely because he proved they were right. The experiments on his dogs had justified their doctrines and practices.

The man himself had an interesting career. A left-handed son of a left-handed village priest, Peter Dimitrievitch Pavlov, he received his earlier formal education in the theological schools in a small Russian village. He soon taught himself to use both hands adroitly and became sufficiently interested in biology to forsake the church and to complete his work for university and medical degrees in St. Petersburg. Then followed years of struggle, for no post was offered the young scientist for eight years after his graduation. He studied in Germany, worked with Russian chemists and doctors, married when he was penniless and began the dog researches which are widely known the world over to doctors, snake charmers, psychologists, baby specialists, horse trainers and scientists.

In these days he watched the various workings of the dog's heart. In order to make the proper records he had to train his animals to stand perfectly still while he stuck small measuring devices into their blood vessels. This was important at the time, but more important was the fact that he learned that all sorts of external factors influenced the dogs, and that if he were to learn about any one reaction he must take into consideration all the things that had happened to that particular dog.

Finally, in 1891, he was made head of the Institute of Experimental Medicine in St. Petersburg, a new project built and sponsored by Prince Oldenberg. Here he studied the normal processes of digestion in dogs, much as Beaumont, the American Army doctor, had done fifty years before in the wounded Alexis St. Martin, who came under his care. Pavlov found that an animal would secrete as large amounts of digestive juice when it saw or smelled food as it did when it was actually given food, and that the kind of juice produced varied if a dry piece of bread or if a juicy steak were offered. The germ of a new idea was contained in these observations; namely, that the higher brain centers played some part in simple bodily processes. The supposition was confirmed in other dogs, which, when deprived of certain of these brain centers, could no longer water at the mouth when offered food. So fascinated by these experiments were the Pavlovs that the dogs were brought home from the laboratory and as carefully nursed by Madame Pavlov as any one of the four small children who then ran about the house. And the world recognized the results by awarding him the Nobel prize in 1904.

But the lessons the dogs were to teach were only begun. Pavlov had not planned to study the machinery and workings of the brain; but like a navigator sailing an uncharted sea, the discovery of a small strait took him into a new ocean. If the dog's mouth watered at the sight of food, what prompted the small glands which manufactured the saliva to work? When could they work? What would stop them? Why did they secrete a different juice with a different food? The strait did indeed lead to a mighty ocean.

And the first experiments revealed the principle for which Pavlov will go down in history as one of the greatest of scientists. For not only would the dog secrete saliva at the sight of meat, but if one rang a bell at the same time the meat was offered, the animal's mouth would soon water if the bell was heard and no meat was given. It was an exciting experiment: some meat, a bell—and a dog alone in a room specially built to be as soundproof and smellproof as possible. The meat was dropped in silently by a concealed observer; the dog sniffed; its mouth watered; it ate and was satisfied. The exact amount of saliva it produced was readily measured, for the skilful hands of Pavlov, who was an excellent surgeon, had attached the salivary glands by a tube to a small bottle. At appropriate intervals the bell rang, and the meat reappeared. After a few trials the dog sniffed, licked its lips, and its mouth watered just as much when the bell rang and no meat was offered as when the meat was offered. This is the conditioned reflex. Any normal dog's mouth will water when food is put in its mouth, and this is called the unconditioned reflex, but only a conditioned dog will react to the bell. The end-result was the same, but one response was implanted by external conditions; hence, it was called conditioned; the other was part of the natural inborn reaction of the animal and so was unconditioned.

Here was a simple explanation not only of the common reactions of living beings but of the more complicated learning processes. It was known that connections are made between two points in the nervous system, much as in an electrical switch, and that once joined they

will connect regularly when proper conditions are present. Here the impulses were sent from the ears at the ringing of the bell to a certain area in the brain from which impulses went out to the glands and saliva was secreted. And after the connection was once established, it worked the same way over and over again.

But it was not so simple as this. For one conditioned reflex could be conditioned by another. Thus the dog who reacted to the bell was confronted with a light, then a bell. A third series of connections had been set up—the eye and its brain centers, the ear and its brain centers, and the glands were all hooked up together. And the endless chain of conditioned reflexes by which Pavlov explained learning was begun. No great stretch of the imagination is needed to see how easily this can be applied to the manner in which we learn to draw away from fire, to recognize our friends or to read.

The ocean, however, was still full of uncharted bays. Why does a dog take food at one time and refuse it at another when it is equally hungry at both times? Why may a certain perfume always recall the face of one fair lady? Why can we train a child to keep quiet when company is present?

First we must know that the nervous system is supposed to work by a combination of two processes: one exciting, bringing two connections together and causing action, and the other antagonistic, blocking the connections and inhibiting the action. Governing all our bodily activities, much in the manner in which traffic in a modern city is regulated, are these two forces of stop and go, inhibition and excitation. Such ideas had been harbored for generations before Pavlov, but his dogs changed them from fancy to fact. The experiment was merely a continuation of the previous ones. One of the animals conditioned to one ring of the bell is subjected to a series of rings followed by no food at all. At first its mouth waters, and it wags its tail in great expectation—but there is no food. A strange business. Again no food. After a series of disappointments it no longer licks its lips. The conditioned reflex is inhibited. It is not forgotten or "abolished," for after a rest period the dog will again secrete saliva when the bell rings. And so, under proper conditions the animal has learned to inhibit its reactions. And how much more capable it is, just as man is, to deal with the complexities of life now that it has two ways in which to meet a situation. It may even, by intensive training, be taught to inhibit its most instinctive reactions even as a boxer learns not to blink his eyes at each impending blow or a cavalry horse to stand quietly during gun fire.

Not only that, but it can also be taught to respond to various tones of the bell or shades of light. First it responds to the sound or light alone, and then as food is offered with only a certain sound or light it learns by a combination of reactions and inhibitions to discriminate between various shades or tones.

The experiments were often long and tedious, but they had to go on, for there was more to learn. A great deal of patience was necessary to train the dogs. Pavlov himself spent Sundays and holidays in the laboratory, but during the week he came and left as promptly as if he were punching a time clock in a factory. His assistants did not have to work so much, but for Pavlov it was necessary. During the early days of the revolution when food was scarce, he himself worked in the potato patch set out around the laboratories so that the dogs could have enough to eat.

His life apart from work was a simple one. After dinner he played a few hands of solitaire —often slept until 9 o'clock, after which he saw friends, served them the late evening meal called "tea" in Russia until 11, and from then until bedtime at about 2, he read, wrote and studied. Each member of the family contributed in some way. For years, Madame Pavlov did all the shopping even to buying her husband's shoes. One son was trained in the laboratories and acted as his father's interpreter, for Pavlov was not a good linguist. Each year took him on a long vacation in the country, where science was banned, and he gardened, bicycled and read his three favorite poets, Shakespeare, Goethe and Pushkin. His gilliflowers were superb, and at *gorodkee,* a vigorous Russian game, he was better than opponents half his age. In later years he traveled widely, a distinguished figure rather resembling Shaw but never seeking the public eye. Once in the Grand Central Terminal in New York City he was robbed of $2,000, his total resources, and took refuge in the Rockefeller Institute for the rest of his stay.

Of the many traits that marked him as a genius, one of the most amazing was his memory for facts and figures, a source of many of the anecdotes told of him. Once he was curious to know about a medal one of his colleagues was wearing and, on finding out that it was given for winning a foot race, he examined it more closely. Months later when racing was the topic of conversation some one asked how long it took to run this distance. The owner of the medal could not remember, although he had worn it for fifteen years; but Pavlov, who had seen it only once, said immediately, "10:11⅘ seconds" and was right to the fifth of a second! He never forgot the name of a dog, though hundreds were trained in the laboratories which he eventually supervised, and many assistants from many lands had charge of the animals. *(Continued on page 189)*

OLD TEASER—BECOMES A JOINER

By PHILIP JARED

EVERY ONE who knew Old Teaser intimately recognized him as a very intelligent, active but obstinate youngster. There had been a time when Dr. and Mrs. Answith had become concerned because his first grade teacher had explained his scholastic shortcomings as being due to his "slowness." This all but incensed his mother, as it might any mother, but the doctor only snorted a little and muttered rather peevishly something about having to contend with rigid public school systems. "They seem to think," he grumbled, "that because some girl is ten years older than her school children, she knows more about *education* than the kids!"

Mrs. Answith faced the facts about Old Teaser. She enumerated a list of recorded deficiencies: Reading was unsatisfactory; writing was poor; neatness was nonexistent; "citizenship," whatever that was in a 9 year old, was deplorable; and, besides, he had been kept in overtime on numerous occasions for fighting. Something had to be done, she almost wailed, because he just would not try to work. In other words, the doctor himself must take a hand in Old Teaser's problems. After further complaining, he agreed.

As I said before, they had had trouble with Old Teaser earlier in his school career, when he was in the first grade. He was only 6 then. I noticed for several evenings he made an effort to interest the boy in newspaper pictures and in the Uncle Wiggly stories. Old Teaser and Little Claribelle too were quite willing to hang around to hear their father read about the adventurous exploits of Uncle Wiggly with his pink quivery nose and his long floppy ears. When it came to helping with the reading, Old Teaser did not try because it was "too hard," or he "didn't wanna." He would become fidgety and insist on quitting his father's lap. Scolding helped this situation some but very little. It looked to me like a long hard job.

During the next two or three weeks several things happened. First, Dr. Answith arranged to have me take Old Teaser, alone, to a psychologist for one of those psychometric tests. The subject had been mentioned to him the evening before, and Dr. Answith had explained that Old Teaser should go with me at the appointed time and do the things they wanted done "to show 'em how smart he really was." The test was made so that every one could do part of it, and even Dr. Answith himself probably could not finish it all. So Old Teaser should try his best "to show 'em a thing or two, and how about it, Quiller?" This line of talk aroused Old Teaser's pugnacity, and he was all for going right then. It was really Dr. Answith's way of getting his son not to be self conscious or antagonistic during the test.

It worked pretty well, for Old Teaser showed that so far as speech, manual dexterity and general intelligence were concerned, he had a superior intelligence rating. The sad fact remained, however, he was deficient in the things he should have learned in school. Mrs. Answith sniffed a bit when she learned the results and said she was of a good mind to tell that snip of a teacher she was the one who really needed the psychometric test.

"Just because we have a problem child," said Dr. Answith, his irritability showing a little, "does not eliminate problem teachers. Don't say anything to her. I'll go over and have a talk with the superintendent. He will reach the teacher better than we can—or else. We'll be all strawberries and cream, and have honey dripping off our tongue for her unless there comes a time to get tough. . . . I've a notion to get on that school board myself!" He removed his glasses for polishing as he stared at the ceiling. That was a sure sign that he was annoyed and doing some hard thinking.

OLD TEASER LIKED TO HEAR HIS FATHER READ, BUT WHEN HIS TURN CAME HE "DIDN'T WANNA."

During the remainder of that school year, Old Teaser's fisticuffs became less prevalent; his "citizenship" assumed a more rosy prospect, and his reading and neatness became more tolerable. And from the remarks I overheard from time to time, his

IT BECAME EASIER FOR HIS MOTHER TO GET HIM TO WASH HIS HANDS.

teacher was fairly blossoming with sweetness toward the Answiths. They were such nice people, so the Answiths heard indirectly from her about themselves. Dr. Answith sort of grunted when he heard that and remarked that at least one more teacher in the grade schools had discovered teaching was a profession instead of a mere job. He dropped his paper and launched into a fireside discourse.

"Tradition is a fine thing when it really does some good by helping people preserve their self respect and spurs their ambitions, but it's no good when it obstructs progress. We've been worshiping educational ancestors who were fossilized before they were interred.

"In the days of the old log schoolhouse, when the best and only teacher taught all the children in the school district, the younger got the same available advantages as the older. Then when schools became a bit snootier and two teachers were needed, the teacher older in service took the easier job and gave the younger children to the less experienced teacher. Since then the same thing has been done far too much, no matter how large the individual school has grown." He became emphatic. "It's a harder job to teach little children because their immature minds have not learned how to help themselves. Besides that, they are so little removed from savagery that they really don't want to conform to civilized standards of conduct and our diplomatic hypocrisies. I maintain that it is the mature, more experienced and better trained teacher who should be intrusted with the teaching of the younger children!"

Then Old Sock, who was not so old then, spoke up. He said, "I suppose if you want somebody to teach a monkey tricks, you should get an experienced monkey teacher to do it, huh?" He grinned maliciously. "I know some teachers who couldn't teach a monkey tricks."

"I don't mean what you mean," said Dr. Answith. "I'm not criticizing the abilities of the teachers but the way the school system uses their abilities. It's harder to teach younger children, and they should have the best teachers."

Anyhow, Old Teaser had made enough progress during the next three years of his eventful life so that Dr. Answith did not find it necessary to go into politics to win a place on the school board. He made better grades in his studies but was barely tolerable on that citizenship as any one knows who has read of his previous antics. As I figured it out for myself, Old Teaser was not expecting quarter from the world and he was not giving any. He still wanted what he wanted, when he wanted it, instantly, if not a bit sooner, which often lead to undiplomatic situations and contests. Some grown-ups are that way, but they do not regard themselves as childish though. I could say a lot of sarcastic things . . . but I'm supposed to record facts about Old Teaser, not my own questionable opinions.

It so happened that a friendly neighbor with a more inhibited or restrainable boy was interested in an organization called Indian Guides and invited Dr. Answith and Old Teaser to one of their meetings. The next thing I knew, Old Teaser was always trying to go into a huddle with his father to discuss their Indian Guide secrets. It became a little easier for his mother to get him to wash his hands and face and to comb his hair before going to school or eating. On a few occasions when he was interrupted at transgressing on the family peace, Dr. Answith had only to mention certain numbers, from one to eight, to secure better behavior. But even the mysterious rites of this organization were not always able to make a good sugar-coated Indian out of one with the grime of boyhood behind his ears.

Then I became curious and filched Old Teaser's Indian Guide manual and read up on the subject. It seems that there was an Ojibway buck by the English name of Joe Friday who had made a profound impression on a "Y" worker. He had Joe come out of the Canadian wilds to lecture to the young men of his organization and got the notion that the old Indian way of father and son teaching was really the best for the son and quite a good thing for the father too. After I had read the manual, I could easily understand what all the mystery was about. Busy fathers were supposed to take enough time off to become really acquainted with their sons and develop a little mutual faith, hope and charity, together with a little more understanding and fellowship.

The first meeting they had at our "wigwam." I was excluded from the council chamber of course. I had an opportunity to surmise more though. There was a rigmarole of tom-toms and then silence. Then once I overheard wampum mentioned. I remember how Old Teaser had

wheedled me out of a nickel for helping with his father's car. That was where his wampum was going—dues. There must have been some lecturing or something going on. Finally I was called to bring in refreshments and saw all of them with Indian headbands on and a feather stuck in them. Then they had some games and went home happy.

Before their tribal initiation and the annual handicraft exhibit, grand round-up or whatever it was, father and son had to make something together. Old Teaser actually complained about how his father wanted to do so much on it that he did not have a chance himself. They managed to settle their difficulties amicably, no scalps lost, and carved out a most gaudy and hideous totem pole which was their pride and brag for months. Perhaps there was some justification, for their totem pole won second or third prize, which was pretty good for amateur or, at best, apprentice Indians.

As time went on, I could see a change gradually working in Old Teaser. His citizenship improved. He could play marbles by the hour without getting into a fight. He began to take an interest in the school athletics without thinking it was silly, and he came home of evenings recounting his competitive exploits. He seemed to lose some of his inherent malice toward the little girls of the neighborhood and little Claribelle. This may have been less real than apparent, because he had more boy's business to attend to and less time to get into mischief. At any rate, Old Teaser's self respect seemed of a less predatory and rapacious nature. All these things were a matter of relativity, as Einstein would say; that is, they were better than before. Never trust a 9 year old too far too long.

Along in the early spring of Old Teaser's ninth year he came home one afternoon making an angry noise suggestive of a cat fight. I was positive he had cats on his mind after I made a pass at him. He jumped back, hissed and spit like a cat, and came for me slowly, making horrible feline claws of his fingers. "Wowr-r-rf, fft-fft!"

The next grab I made for him was so nearly successful that he forgot about it being a cat fight and scampered out of the garage. After a few doleful howls, he returned peacefully.

"I'm gonna be a Bobcat," he announced.

"Where?" I asked, trying to annoy him by my stupidity.

"Up at school," he replied.

"Anywhere but home is the best," I agreed curiously. "You won't have to try very hard to be three or four bobcats."

"Naw, I mean it," he insisted proudly. "I'm gonna join the Cubs if Daddy'll let me."

"Now don't tell me bobcats have cubs; they're kittens, aren't they?"

BEFORE THEIR TRIBAL INITIATION, FATHER AND SON HAD TO MAKE SOMETHING TOGETHER. SO THEY CARVED OUT A HIDEOUS TOTEM POLE.

"Then I'm gonna be a Wolf in a pack." Tremendously excited at the prospect, he ignored my gibes.

"That will be a lot worse for the natives," I insisted. "It's bad enough to have a wolf at the door without a flock of cubs in the house."

"Pack, not flock! Whad'ye think I'm talkin' about—sheep?"

"Since you're becoming technical about it, I am not thinking about gentle little lambs. Is there anything I can do to help you be a ring-tailed, tooting, fighting, snarling cub of a bobcat-wolf? What's the grand idea anyway?"

"You've heard of Boy Scouts?" he demanded, and I nodded. "You gotta be 12 to join them. I'm 9 already, and I can join the Cubs. They're sorta little Scouts or sumpin."

"I thought that Indian Guide thing you and your father belong to was enough!" I objected. "You don't do all you're supposed to in that, do you?"

"Uh, 'most ever'thing. In the Cubs I get to wear a uniform. You gotta do a lotta things."

"Are you expecting to quit the Indian Guides? What will your dad think about that?"

"No, I'm stayin' with the Guides. Sometime, maybe, I can get Daddy into the Cubs. There's always a man an' a woman in each pack and den. Maybe I can get Mama in too." His eyes were sparkling excitedly.

"How about Old Sock, Judith and Claribelle? How about *me?* Can you get *me* in too? Gee, I'd certainly like to be in a nice club of some sort myself." I put on a moaning attitude.

Instead of poking fun at my aspirations and feigned loneliness he stared at me surprised, as if he had never seen me before. I felt certain that for the first time in his life he was understanding how some one else felt when he was left out and unwanted. For the first time in his existence he realized that he had some social responsibility toward the other fellow. Here he had unthinkingly violated Rule Three of his Indian Guide code: To put the other fellow first.

The stare left his eyes and a look of uncertainty took its place. "Aw," he stammered, scraping the floor with his toe, "you wouldn't like this kid stuff. You don't have any kids that you have to take care of," he declared hopefully.

"Don't I like you and little Claribelle? Don't I feel like I have to help take care of you?" I insisted cruelly and very presumptuously. You see, I was only the glorified handyman at the Answiths'.

"Aw, gee whiz, Philip . . ." Suddenly his whole demeanor changed. "You don't like me, and you just hate me! I don't like you a bit!" he said angrily. He dashed out of the garage like a scared bobcat.

Old Teaser was so inexperienced and so afraid he would "turn soft" with me that he was really angry with himself. I began to wonder after a few days whether I had not made a serious mistake with him, for he studiously avoided me or else spoke insolently to me. I made no retaliatory moves, and he began to be more conciliatory. Meanwhile he said nothing about being either a Bobcat or a Cub, for I asked Dr. Answith. Then I told the doctor what had happened.

About ten days later, Mrs. Answith ordered the necessary Cub paraphernalia for Old Teaser. As long as I was around, he lapsed into a sulky silence or else showed off boisterously. He did not want any compliments from me about his nice new uniform or his flashy Cub kerchief. I really felt badly about the barrier between us, but Mrs. Answith and I talked it over and agreed that it would be best for Old Teaser to work for his own solution for the difficulty, if he wanted one. We waited for almost a month. Meanwhile there was no news from the Cub's Den about Dr. or Mrs. Answith's possibilities for affiliation with his organization. The Indian Guide duties were, with certain lapses from grace, rather better performed.

One afternoon he came home from Cub meeting jubilant about something. They tell me a boy of 9 can't keep a secret. Well, maybe so, but I didn't pay much attention to what he was doing. I had plenty of other things to do. All that I noticed at the time were his provokingly speculative glances in my direction. That had happened many times before, you may be sure.

The next Sunday morning a man rang the doorbell. "I'm Kent T. Douglass," he said when I opened the door. He wanted to see me. "I am representing the National Council of the Boy Scouts of America. Cub Frederick Quiller Answith, who lives here, says you may be interested in becoming a Cubmaster."

"Uh-uh," I stammered, wondering whether Old Teaser was watching.

"If you are interested, Mr. Jared, I'll make arrangements so you can learn as quickly as possible what your duties will be."

After I had recovered from my surprise at this unexpected attention from strangers, and the air had again filled my lungs, I invited him down to my servant quarters. When I saw that did not make much difference to Mr. Douglass I really opened up with questions. I knew then I had been well recommended by Old Teaser and perhaps by Dr. Answith.

And that is how Old Teaser played a trick on me: He joined the Cubs and made a Cubmaster of me. When I wanted to thank him for his kindness he would not listen but began to tease me. I quit trying and made a feint at him with my fist. During the scuffle which followed, all became well between us again.

Pretty diplomacy on all sides, I call it, and mighty fine child guidance work too!

THE STORY OF HUMAN ENERGIES (Continued from page 144)

back to normal activity. A well known psychologist, who was "down and out" for nearly a dozen years, lived a retired life on a farm; then finally resuming his professorship, although not in full activity, he wrote books, including one on the psychology of relaxation.

There are thousands of such stories. A collection of biographies of neurasthenic persons would make a dismal symposium, were it not that the majority of them have happy endings. Not the woods but the cities and towns are full of the victims of fatigue, and the fortunate who are immune from fatigue cannot understand what all the misery is about. Dr. Beard anticipated the need of a fatigue clinic. He was a shrewd observer in days when few paid serious attention to "nerves." He offered one consolation; namely, that "those who have had a long battle with their morbid feelings, who have been perhaps disabled, crippled, exiled by neurasthenic incapacity, look ten years younger than their vigorous friends." In view of this advantage, it seems somewhat unfair that the majority of neurasthenics should be men. But nowadays, with so many women in competitive occupations, neurasthenia among them is on the increase. It is said that the philosopher Bergson maintained that a goodly share of the important work of the world has been done by neurasthenics. Certainly the Neurasthenic Register would include, along with valued citizens and mediocrities and failures, a long list of distinguished names.

While fortunately the great majority of men and women do not experience neurasthenic fatigue, they know the run-down condition which is the first stage in the decline. The ideals of our times, our accelerated and crowded lives, the emphasis on speed and output, all make for overstrain. We insist on running our nervous systems as though they were motor cars; the pedestrian is almost extinct. We make too costly sacrifices for immediate returns; and that policy is not true physiologic efficiency. For that consists primarily in adapting the conditions of work to the worker, to the natural laws

To give the great majority of the normally tired a notion of what they have escaped, I append a symptom map of the dismal land of *Neurasthenia,* from whose bourne, fortunately, most travelers return to dwell, though somewhat handicapped, in *Normalia.*

Impairments of Body	***Afflictions of Mind***
Nausea-like sensation (at pit of stomach)	Painful effort—in attention; in exertion
Nervous indigestion	Sense of confusion
Headache (especially in back of head)	Painful sensitiveness (to noise, light, etc.)
Flushing and throbbing	Sense of impending calamity
Heaviness of limbs	Brooding anxieties
Irregular pulse	Morbid fears (phobias); localized in one organ or another
Excessive yawning	
Difficulty in sleep	Morning lassitude
Vague shooting pains	Waning of zest
Faintness under food delay	Overattention to ailments
Tender, tense scalp	Fluctuation of symptoms under emotional stimulation
Cold feet	
Spinal tenderness	Short span of energy pattern
Motor spasm (on going to sleep)	Timidity; inhibited socially
Twitching of small muscles	Sense of unreality
Spasm of glottis	Constant introspection
Ocular congestion	Indecision and embarrassment
Ringing in ears	Querulousness; peevishness
Sweating of palms	Sporadic want of confidence
Chronic drowsiness	Upset by loss of sleep
Chronic distress in hot weather	Ready depression under disappointment

If the reader answers "Present" to a goodly number of items in this roll call of symptoms, his makeup inclines to the neurasthenic temperament. If he answers "Decidedly so, and at times to the verge of incapacity," he qualifies as a neurasthenic. The reader is advised to peruse the check list with calm self analysis, not in the temper of the medical student who discovered in himself the symptoms of all the diseases described in the lectures, with the single exception of "housemaid's knee." Every one is acquainted with fatigue symptoms akin to these nervous liabilities but well within the measure of normality. Normal "good and tired" fatigue has a pleasant tang, as if heaven-sent; abnormal, neurasthenic fatigue is sheer torment.

Neurasthenia occurs in all levels of the population but is especially prevalent among intellectuals and those who have inherited sensitive nervous systems, who take hard the cuffs and rebuffs of life. Neurasthenic symptoms, once recognized, can be detected in childhood and youth, and heeded accordingly. We have slowly learned that the neurasthenic demand sympathetic consideration. Everywhere we must respect the energy cycle.

of the human energy machine, which is not a machine but an organization of the fourfold man. Industrially, fatigue has been called "a multi-billion enemy of America"; it doesn't pay either in dollars or in happiness to become too tired.

Real as is the risk of overfatigue, it should not frighten one out of the full use of one's powers. As William James contended in "The Energies of Men," many of us live at lower levels of performance than we could attain. There are strong tendencies in human nature that work against achievement. The simplest is laziness; a more subtle form of it is inertia and the habit of not doing things, and more seriously, lack of ambition and a feeling of inferiority. To arouse dormant energies is vital; but it does not mean to step on the gas on all occasions. It is a principle of nature that all organs, bodily and mental, require energizing to maintain strength and health. Muscles long deprived of their nerve stimulations will atrophy. The urge to energize must be kept vigorous even while recognizing the risks of overstrain.

We readily drift, as James wisely said, into habit neuroses and lapse into low levels of performance, calling almost anything a day's work. The elasticity of the nervous system appears in the contrasts of country and city life. To cite James:

> The rapid rate of life, the number of decisions in an hour, the many things to keep account of, in a busy city man's or woman's life, seem monstrous to a country brother. He doesn't see how we live at all. A day in New York or Chicago fills him with terror. The danger and noise make it appear like a permanent earthquake. But *settle* him there, and in a year or two he will have caught the pulsebeat. He will vibrate to the city's rhythms; and if he only succeeds in his avocation, whatever that may be, he will find a joy in all the hurry and the tension, he will keep the pace as well as any of us, and get as much out of himself in any week as he ever did in ten weeks in the country.

The "new level of energy" becomes permanent. The problem for each of us, with close regard to the nature of his power plant, is to find the best equilibrium of energizing and rest; this is more than the maximum achievement, or the *most* one can do, in that it is the optimum, the *best* that one can do. Quality goes into it, and the choicest of rewards come in the joy and contentment in one's work—working with a will and with a hum.

There is much more to the story of the human power plant. Though nature has written a "No Admission" sign over its entrance, we have a fair knowledge of its output and the conditions of its operation. The next "film" will present a close-up view of the nature and control of energy, fatigue and rest.

[NOTE.—Part 2 of "The Story of Human Energies" will appear in the March issue.]

YOUR AGE and YOUR HEART

(Continued from page 119)

should we not consider the child with heart disease in this way? Let the mother think of her child as a serial story which she does not wish to have end prematurely. She must guard her child against infections which are not safe for an already crippled heart. Add to this, care, fresh food and air, plenty of sunshine and something to do, and both she and the child will enjoy life and learn to live with heart disease.

Mute testimony to the effect of rheumatic heart disease on a young girl of 14 was noted recently. Her life had been too sheltered because of her handicap. She seemed more like a startled deer in the woods than an adolescent girl. When she was asked what she liked to do, she said hesitatingly, "Draw and read, *but* the girls are all in school!"

The broadcast of February 9 will bring a heart to heart talk in which the American Medical Association and the National Broadcasting Company will present dramatically the story of what the decades do to heart disease and you—a story of interest to every one.

If you have a healthy heart, rejoice—and learn how to keep it in that condition.

If you have a heart that's not so healthy, turn to page 162 for "ten commandments" and an excellent plan for living with heart disease.

And in any event, listen in to the broadcast on February 9, and watch for another article on this universally important topic in the March HYGEIA.

The syphilis situation is now becoming a main topic of discussion. It used to be talked of in hushed tones, but now every newspaper and periodical teems with publicity on the subject. Every case of syphilis diagnosed early and immediately treated means one less potential damaged heart twenty years later. Too often the original infection is forgotten and left untreated. Middle age gets the lion's share of this type of heart disease. Until syphilis can be wiped out there will be syphilitic heart disease. Pain and shortness of breath are frequently the result of some disorder that has been incubating for some time. As an authority states: "Syphilis is all the more insidious because often those suffering from it are not aware that they have it.

(Continued on page 173)

EYES in INDUSTRY (Continued from page 128)

to 75 footcandles for work done on dark material, is apparently adequate.

In textile mills general illumination of 20 footcandles or more is recommended for warping, slashing and inspecting. The recommendation for weaving is from 40 to 60 footcandles. For automatic tying-in, additional special lighting of from 50 to 100 footcandles is required, and for drawing in by hand, 100 or more footcandles.

In the cleaning and pressing industry a general illumination of from 10 to 20 footcandles, without glare or excessive shadows, is recommended in most departments. Higher values are required for close operations. For mending and other sewing operations, supplementary lighting should be used on the machines, with the light directed on the needle. In examining and spotting garments, daylight illumination is preferred. If artificial illumination is used, a high level of 150 footcandles is necessary for satisfactory inspection. In the final inspection department an illumination of from 100 to 150 footcandles is desirable.

The manufacture of paper includes such a variety of mechanical set-ups that the maximum flexibility of lighting is required through the use of various lighting devices. A higher level of illumination is required in the sorting room, where the eyes of the workers are subjected to greater strain than in other tasks, as well as on the paper making machines, where the worker must see that the pulp and finished stock are running true in color and texture.

In the coal industry an important medical problem is miners' nystagmus, a condition in which the eye oscillates. Deficient illumination in the coal mines possibly causes this condition.

The minimum illumination required for the prevention of miners' nystagmus, according to Sharpley (1936) is a brightness of at least 0.01 candle per square foot on the coal surface. Illumination may be provided by means of electric safety handlamps, flame safety lamps or cap lamps. The cap lamp seems to be the most practical since it moves with the head and illuminates only that part of the working area which the miner faces. Moreover, it provides side illumination of less intensity for peripheral vision.

There are, of course, other considerations than nystagmus to be studied in mine lighting, and the minimum illumination suggested as necessary for preventing nystagmus would not be tolerated even in the most poorly equipped factory.

The human eye is undoubtedly the most important sense organ of man. Defects of vision, many of which are uncorrected, are common in industrial workers. Weak eyes are fatigued and injured by inadequate illumination under the conditions of close focusing required by the modern factory system.

Studies of industrial illumination have indicated that a majority of the plants in the United States are inadequately lighted. This condition chiefly obtains because factory owners and workers have been ignorant of the importance of adequate light in the seeing process and have failed to understand that conservation of the eyesight of the workers can be fostered by improved seeing conditions.

During the past few years the quantities of light for certain tasks recommended by authorities have risen gradually. From our present knowledge of the effect of illumination on seeing, the following levels have been recommended: For prolonged visual application to fine work requiring detection of fine details, as engraving or reading blurred proof with small type, 100 or even 150 footcandles may be required. For some tasks, 50 footcandles might permit maximum efficiency and comfort. For less prolonged tasks, requiring discrimination of grosser details, as clerical work, 20 footcandles is usually sufficient for reading. When no fine details must be observed in industrial work, comfort and efficiency are usually maintained with from 10 to 15 footcandles of light. In some of the grosser tasks, 5 footcandles may suffice.

Improved industrial illumination conserves the eyesight of workers and tends to promote better health and efficiency. In an age when so many eyes are failing to give a lifetime of service it is important that all precautions be taken to conserve eyesight. From the standpoint of the industrialist the improvement of seeing conditions is good business. Good illumination increases the efficiency and morale of workers, tends to reduce accidents and brings about increased production, greater accuracy in workmanship and improved quality of products.

[NOTE.—*This is the fourth article in a series dealing with the effect of illumination on the eyes. The first article, by Dr. James E. Lebensohn, was concerned with general problems of illumination, such as the structure of the eye, the manner in which eyestrain produces disturbances, and the effects of glare and fatigue on the eye. In the second, Dr. Harry S. Gradle discussed lighting in the schoolroom. The third, by Dr. Edward S. Jackson, dealt with light in the home. In the concluding article, which is scheduled for the March issue, Dr. Arthur J. Bedell's subject will be the correct light for the eyes of the office worker.*]

TO AMERICA'S SCHOOLS — YOUR HEALTH!

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*WBEN	Buffalo
WCAE	Pittsburgh
*WTAM	Cleveland
*WWJ	Detroit
WSAI	Cincinnati
WIRE	Indianapolis
*WMAQ	Chicago
KSD	St. Louis
*KSTP	Minn.-St. Paul
*WHO	Des Moines
WOW	Omaha
*WDAF	Kansas City
WLW	Cincinnati
WFEA	Manchester
*WSAN	Allentown
WORK	York
WMBG	Richmond
WCOL	Columbus
*WGL	Fort Wayne
WOOD	Grand Rapids
*WBOW	Terre Haute
*WGBF	Evansville
*WEBC	Duluth-Super'r
KSOO	Sioux Falls
KANS	Wichita
*WTAR	Norfolk
*WPTF	Raleigh
*WSOC	Charlotte
*WFBC	Greenville
*WWNC	Asheville
*WIS	Columbia
*WCSC	Charleston
WAVE	Louisville
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*WSMB	New Orleans
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*WJAX	Jacksonville
*WFLA-WSUN	Tampa
*WIOD	Miami
*KGBX	Springfield, Mo.
KVOO	Tulsa
*WKY	Oklahoma City
KGNC	Amarillo
WFAA	Dallas
WBAP	Fort Worth
*KTBS	Shreveport
*KTHS	Hot Springs
KARK	Little Rock
KPRC	Houston
WOAI	San Antonio
KFDM	Beaumont
KRIS	Corpus Christi
KRGV	Weslaco
WTMJ	Milwaukee
WIBA	Madison
WDAY	Fargo
*KFYR	Bismarck
KOA	Denver
KDYL	Salt Lake City
*KPO	San Francisco
*KFI	Los Angeles
KGW	Portland, Ore.
*KOMO	Seattle
KHQ	Spokane
*KTAR	Phoenix
KOB	Albuquerque
KFBK	Sacramento
KWG	Stockton
*KMJ	Fresno
KERN	Bakersfield
KIDO	Boise
KGIR	Butte
KGHL	Billings
*CFCF	Montreal

* Reported broadcasting the programs.

SCHOOLS ARE LISTENING TO HEALTH PROGRAMS

THE RADIO program "Your Health," broadcast each Wednesday at 2 p. m. eastern standard time and heard at corresponding hours in all parts of the country via the coast-to-coast Red network of the National Broadcasting Company, has attracted the attention and interest of the schools, if mail received is any indication. The following letter, written by a member of a junior high school class, was received with interest:

December 9, 1937

Director of Public Bureau of Health,
American Medical Association,
Chicago, Illinois.

Dear Dr. Bauer,

I am writing to you for the fourth hour 7B science class of Jarrett Junior High School.

Our class listens to "Your Health" program every Wednesday and finds it very beneficial. It follows closely to the things we study.

We will keep on listening to "Your Health" program as we have so far this year. We are always eager for Wednesday to come.

Yours truly,
PATSY FORD.

The stations marked (*) on the list at the left have been reported by the National Broadcasting Company to be broadcasting the program as this issue of HYGEIA goes to press. In certain localities the radio stations have previous commercial commitments which keep them from broadcasting the program. In some instances we have already been assured that these conflicts will be cleared and the program will go on during the second semester. We can do very little about local situations. They must be settled locally. Evidence presented to the radio station management that a school health broadcast would be a useful and much used feature would have weight in most instances. In one or two localities where the program is not being received, it is being reenacted locally by high school groups. To a limited extent we are able to furnish scripts for this purpose, but in general it seems best to point out the value of the program to the local radio station management as a public service feature.

In this connection it should be noted that such a nationwide school broadcast is not a one-year program. It will in all probability be continued for a number of years to come. The first year is experimental. Radio managements should be asked to watch for this feature in planning next year's schedule.

HYGEIA is eager to hear from teachers as to the value of the program and especially what definite or perhaps unusual use was made of it in a particular school. Suitable letters will be published in this space. No matter how large the school system or how small the rural school, information and suggestions will be welcome.

HEALTH TEACHING HELPS BY RADIO

DATES AND TOPICS OF WEEKLY BROADCASTS

1938

PREVENTING FUTURE ILLNESS

February 2—Rheumatism and Arthritis: known factors in the causation of arthritis, and its care.

February 9—Healthy Hearts and Arteries: known ways of protecting the heart against infection and hygienic abuse; how to live with heart disease.

February 16—Don't Fear Cancer—Fight It: known factors in the cause, prevention and treatment of cancer.

February 23—Overcoming Diabetes: individual efforts plus medical aid will win against diabetes.

PUBLIC HEALTH

March 2—Water, Waste and Sanitation
Importance of community control of water supplies, sewage disposal and general sanitary matters.

March 9—Protecting Perishable Foods
What the community can and must do to protect fresh foods such as fish, fruits, vegetables, meats, bakery goods.

March 16—Keeping Books on Health
The meaning and the importance of vital statistics, contagious disease reporting and community health records.

March 23—Catching Disease from Animals
Rabbit fever, rabies, undulant fever and similar infections, and what can be done about them.

HEALTH EDUCATION

March 30—A Fool for a Day
Fallacies and popular beliefs that are not true and that influence behavior in a manner detrimental to health.

April 6—Living with People
Elements of mental hygiene; getting along with people; adjustment to the environment.

April 13—It May Happen to You
Accidents in the home and on the highway and ways to avoid them.

April 20—Who Chooses Your Doctor?
The characteristics of a reputable physician as distinguished from cults, quacks, fakers, faddists or exploiters.

MOTHERS AND CHILDREN

April 27—Healthier Babies
Daily routine of the healthy baby; medical supervision; feeding.

May 4—Healthier Mothers
General advice for the expectant mother; good for boys and girls to know about

May 11—Hospitals Aid Health
The place of the hospital in the health program of the individual and the community.

May 18—Runabouts, 1938 Model
The preschool child and the health and personality problems of that age.

USING HEALTH KNOWLEDGE

May 25—The Health Check-Up
Periodic health examination and what follows, and why.

June 1—Vacation Plays and Misplays
Making the vacation a real contribution to health and recreation.

June 8—Graduation and Then What?
A new phase of life begins at commencement, and health contributes to success.

June 15—What Medicine Offers for Health
Flashes from the American Medical Association meeting at San Francisco, giving highlights of medical progress.

SUGGESTIONS FOR TEACHERS

The following briefs of the fourth group of programs, together with the reading references and suggestions for things to do in connection with the programs, are intended as helps to teachers. The program itself is not intended to supplant health teaching, but to supplement it.

February 2: Rheumatism and Arthritis.—This program would seem at first glance to be of small interest to young persons, but the fact is that it should interest them considerably, because many conditions which may tend to produce arthritis begin in youth.

Arthritis is the medical name for a disease which is commonly called rheumatism. This is usually regarded as disease of the joints. It is most common in old age or at least middle age, but sometimes it appears quite early in life, even during high school age. Another disease of the joints, called acute articular (joint) rheumatism, is common in children and more seldom found in adults, except for those whose occupation takes them outdoors in severe weather a great deal. These diseases are not the same. Neither are they entirely diseases of the joints. Both affect the body as a whole.

We shall consider acute rheumatism first. The word "acute" does not mean, as is often believed, exceptionally serious. It means of quick development and short duration, as distinguished from chronic, which means long lasting. Acute articular rheumatism is also called acute rheumatic fever. It is an infection with a germ closely related to the germ of scarlet fever. A high fever develops, and there is swelling and redness of one or more of the larger joints of the body (shoulder, elbow or knee). Usually one or at most two of the joints will be affected, then will recover; then others will swell and be painful. The patient is very sick. Among the dangerous complications are heart disease, kidney disease and St. Vitus' dance, which is the result of injury to the nervous system from the infection. Often, but not always, rheumatism

develops in patients who have infected tonsils. The effects of rheumatism may last a lifetime, especially if the heart is affected. Patients who have once had it are liable to have additional attacks. Prevention consists in necessary attention to infected tonsils, prevention of exposure to cold and wet and prompt treatment by a physician when there are signs of illness with pains in the joints.

Closely related to rheumatism are growing pains. Those vague and indefinite aches in the limbs, which are ordinarily laughed off by parents, should be taken as danger signals. Normal growth is not painful. These pains indicate that some infection is being absorbed from somewhere. A physician should be consulted.

Chronic arthritis is the disabling disease which deforms the limbs and the joints of older persons. Many students will have relatives who suffer from some degrees of this disease, and it is worth their while to know what may be some of the causes which tend to produce arthritis as they grow older. Among the first of these is heredity. There seems to be a distinct trend toward arthritis in some families, less in others. It is apparent that persons from families in which arthritis has occurred should take extra care of themselves. Much of the hereditary tendency has to do with body build. Heavy, thickset persons have a stronger tendency toward arthritis than thin persons, though the disease may finally reduce them to a condition far below normal weight. Among other influences is infection of so-called focal or hidden type. It is quite possible for an infection to occur in some part of the body and never become noticeable enough to call attention to itself, yet at the same time to be slowly feeding poison into the body and injuring the delicate membranes which line the joints. Such infections occur about the roots of the teeth when teeth have been killed and filled; they involve the tonsils, the gallbladder, the sinuses about the nose, the intestines and sometimes the reproductive organs. Often such foci are hard to find. Sometimes when they have been found, it is too late to help matters much by getting rid of them. Even if further harm is prevented, so much may have already been done that it is too late to help the patient. This, of course, is not necessarily a reason why further injury should be permitted, even though no improvement can be promised. In other words, if a patient has had arthritis for years, too much should not be expected from the removal of a focus of infection, even though the removal may be desirable to avoid continuing injury.

Diet is not known to be a cause of arthritis, but its control is important in the treatment of the disease. Modern diets for arthritis are not as restricted as was formerly the practice; fruits and vegetables are ordered liberally, and meat is not always restricted. It has been recognized that the patient requires a good diet to keep up nutrition and build up resistance. Fruits and vegetables are especially important. Extra vitamins may be prescribed.

Arthritis is often treated with heat in various forms, which almost always gives comfort and sometimes seems to exert a curative effect. Artificial fever, produced by injections or by various forms of heat cabinets, is also applied. Modern application of heat is often through the electrical machine known as diathermy, which creates internal heat in the tissues by passing through them an electric current very small in amount but changing direction with extreme rapidity. This is useful in some cases, but there is no magic attached to it. Drugs are given to relieve pain; there is no drug that will cure the disease. Treatment is often unsuccessful, even in keeping the patient comfortable.

Because of the chronic character and distressing nature of the disease, victims constantly live in hope that they may find something to cure them. This makes them easy prey to quacks, fakers and sellers of useless remedies. Money spent for such useless and hopeless efforts is, of course, not available for real treatment.

SUGGESTED PROJECTS

Get a joint from the butcher shop, and do the following:

Work it back and forth, and note how smoothly it works.

Try to twist or pry it out of shape, and note how strong it is.

Cut it open carefully, noting how thick and strong are the white bands of fibers which hold it together.

Notice the thin, clear, slippery fluid which escapes.

Notice the hard smooth surfaces of the ends of the bones and how slippery they are.

Observe what would happen to the smooth action of this joint if: (1) the bones which form it should grow out of shape and interfere with its motion; (2) the smooth shiny surfaces should be rough and uneven, or (3) the surfaces should grow together and stiffen the whole joint.

Observe among the members of your family any who show signs of trouble in their joints.

Observe yourself for growing pains (but don't imagine any pains).

Consider your own condition: teeth, tonsils, sinuses of the nose. Have you had a medical examination within the past year?

Do you think that carrying a buck-eye will cure rheumatism? Or a potato? Or a copper ring in the hip pocket? How about wearing copper nails in the shoes to "ground the pain?"

REFERENCES FOR TEACHERS

Texts previously suggested.

ARTHRITIS AND RHEUMATIC DISEASE by Maurice F. Lautman. Price, $2.25. New York: McGraw-Hill Book Company, 1936.

CONQUERING ARTHRITIS by H. H. Margolis. Price, $2. New York: The Macmillan Company, 1931.

February 9: Healthy Hearts.—Healthy hearts for the years to come are built in childhood and youth.

Heart disease is commonly spoken of today as the leading cause of death; and so it is, if we count numbers only. What young people are interested in is not the fact that most old persons die of heart disease; they want to know what are the chances of heart disease in youth, and what they are going to do about it.

Most persons are born with healthy hearts. The few who are not are liable to have short life. Few of them will reach high school age. This refers to those who have so-called deformities of the heart which arise before birth and are due to causes as yet unknown. Having healthy hearts, young people ought to take good care of them. When heart disease develops, there is a reason for it. It is not just some mysterious hard luck. The causes of heart disease in youth are as follows:

1. Acute infectious diseases such as scarlet fever, measles, rheumatism, septic sore throat or even repeated ordinary tonsillitis. The infection gets into the blood and so into the heart, where it injures

(Continued on page 167)

SCHOOL and HEALTH

Conducted by J. MACE ANDRESS, Ph.D.
67 Clyde Street Newtonville, Mass.

BUILDING THE HEALTH CURRICULUM IN THE HIGH SCHOOL: VI

THE CONFERENCES on health education by the faculty of the Queenstown High School gained momentum as they continued. It became increasingly evident that the health of the student body was a major educational problem and that every teacher in the school had opportunities and even responsibilities for the success of a vital health program. The sixth conference found the principal, Mr. Richards, opening the meeting.

MR. RICHARDS: Our last conference on physical education and health showed how much was being contributed to healthful living by this department of our school. But there is still a chance for improvement. If we recall our own school days we may probably realize what an improvement has been made in training boys and girls in wholesome sport. In that our school certainly excels.

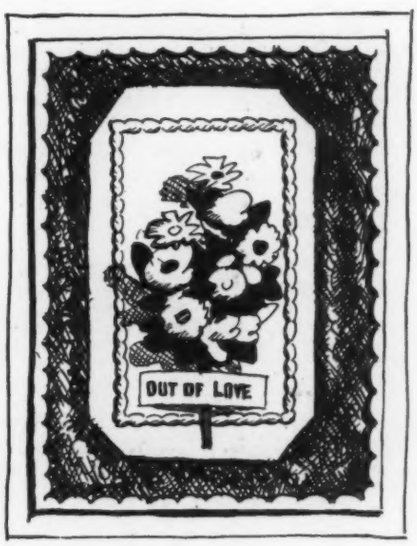
Today we are scheduled to consider the nutrition program in the high school. The word nutrition has been interpreted in various ways. At the beginning of our work in nutrition it was commonly believed that the condition known as malnutrition was due to insufficient food. This may be true; but malnutrition, as I understand it, is largely the result of the lack of the right kind of food. However, this is a question for our experts to determine. Miss Walker, the head of our department of home economics, will start the discussion.

MISS WALKER: As you know, I offer a course on foods; but my contribution to the nutrition program is limited by the small number of pupils who can and do elect this course. Girls who are preparing for college usually find that it will not count for college credit. Since my classwork touches a relatively small number of students, I think the school must provide other avenues to reach all our pupils. Doubtless this will be brought out in our discussions.

Mr. Richards has suggested that the lack of the right kind of food may be a cause of malnutrition. Nutrition really concerns itself not only with the character of the food supply but also with the needs of the body and with all the steps in the digestion and absorption of food within the body. I have in mind now a certain girl who eats the right kind of food but is malnourished because she has diseased tonsils and adenoids which interfere with the proper building up of her body.

I think it would be well if every teacher had a clear conception of a well nourished child and also of the malnourished. You will be interested in these photographs, which I will pass around to you. Here (holding up a picture) is a picture of a well nourished girl. Notice her fine posture. She has a surplus of energy and is alert. The color of her skin is pink; her weight is adequate for her height; the muscles are hard, and there is a layer of fat beneath the skin. Her food habits are excellent. She sleeps well and recovers normally from fatigue. It is not entirely an accident that she is the captain of a winning hockey team.

In contrast, notice the picture of this boy who is a junior in high school. Notice his poor posture. There is a lack of luster in his eyes. He is abnormally pale, does not sleep well, complains of colds and is easily fatigued. His unfortunate health habits and a number of remedial physical defects do not leave him free to gain in weight.



MISS BENNETT: Does a knowledge of weight alone make it possible to diagnose malnutrition?

MISS WALKER: No, by no means. A number of years ago it was quite the style to weigh and measure all the children in the lower grades. An arbitrary standard based on the weighing and measuring of large numbers of children was adopted. The nutrition of the children was then judged according to the zones in which they might fall. Those within a certain range centering around the average were called normal or well nourished. Those above this middle zone were overweight. Those definitely below the middle zone were judged to be in ill health and malnourished. In some schools there were monthly weighings, and children were given white, blue and red cards corresponding to these zones. Such procedures were discarded when it was found that either well nourished or malnourished children might be found in any of these zones. Today we realize that only the family doctor or the school physician is capable of making such a diagnosis.

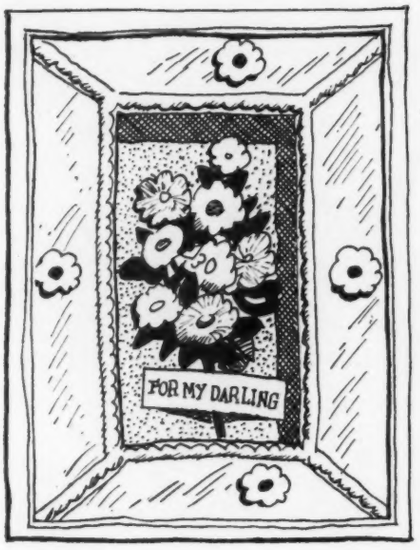
MISS EVANS: Height and weight are still considered important, are they not?

MISS WALKER: Yes, decidedly so. When a pupil loses weight over a considerable period of time, it is a pretty sure sign that something is wrong. It may mean neglect in health habits or the beginnings of a disease.

MR. RICHARDS: I suppose you center your efforts on the health of the pupils in your own class.

MISS WALKER: Yes. Every pupil makes a study of her own health problems. The girls find that in some cases they need to increase their weight. Others are anxious to lose weight. Some pupils are not free to gain until certain physical defects are removed. If their families are not financially able to do this the efforts of cooperating health agencies, such as the Red Cross, are enlisted.

My pupils have a general review of the problems of nutrition. The



girls work on such projects as this: Mr. Jones and his family, consisting of his wife, a baby aged 10 months, a boy aged 12 and a girl aged 16, come to Queenstown to live. The father gets $35 a week. How can this money be used on a budget system so that the family may get the greatest amount of happiness and well being?

Working on such a project involves visiting markets, looking up rents and becoming more familiar with local conditions. Some of our pupils become interested in child training and make a study of some child. Often they get a chance to take care of children and receive some financial remuneration. All the girls get training in cooking food, setting a table and certain essentials in home management. They also collect recipes and assist their mothers in planning the family meals.

MR. RICHARDS: This is an excellent report of accomplishment. It is too bad that so few girls have this course and that the boys are omitted. We have been able to reach many of the boys through our health clubs that take up the problem of camp cooking.

Mr. Walters, you teach physiology and hygiene. What opportunities do you have to teach nutrition?

MR. WALTERS: We cover the factual material found in the ordinary textbook in physiology and hygiene. The pupils get an understanding of the bodily processes and how they may help the body do its work. We plan to help each pupil to manage his life better in the interests of mental and physical health. This includes a study of the physiology and anatomy of the digestive system and personal hygiene. I am sorry that this is not required for those who expect to go to college.

MISS RANDOLPH: My field is general science. We are trying to find out what science is and what it may do for the welfare of human beings. The science of nutrition is part of this great story.

MR. RICHARDS: It is gratifying to find that we are attacking this nutrition problem on so many fronts. You have already seen some of the weaknesses in our program. It is very uneven. Only a small proportion of our pupils get a comprehensive and adequate training. Most of this is incidental and limited to theory. It should be practical.

There is one point in our school activities where we may influence pupils in their choice of food and in food habits. This is through our school cafeteria. Miss Johnson, a trained nutritionist, is in charge. Miss Johnson, will you tell us about your project?

MISS JOHNSON: Most of you are already familiar with what we are doing. Last year we made a study of the actual choices of food made by our students. We found altogether too many pupils who did not drink milk and who made a meal of cake and cookies and other desserts. Some simply ate a chocolate bar. Hot dogs and pickles were altogether too popular.

This year we have adopted plans to encourage the right choices of foods. We have asked the teachers to talk over with their pupils some of the requirements of a balanced lunch. The requirements of an "A" lunch were presented in large posters on the wall of the cafeteria from material prepared by the National Dairy Council, Chicago. Special pains were taken to prepare good combinations of food at popular prices. Every effort was made to make the vegetable dishes attractive. Our cashier, a young woman of pleasing personality and popular with the students, has cultivated the art of sizing up an order of food and giving suggestions to students. Sometimes she asks: "Is this an A lunch?" We are still experimenting, but we have already discovered that the amount of milk and vegetables consumed in our school cafeteria has increased. We invite your suggestions and further cooperation.

To Contributors:—*The editor of the School and Health Department will be pleased to receive articles dealing with the actual solution of concrete and practical health education problems in the school. Contributions on general theory are not solicited. Articles must not exceed 1,000 words in length. Stamps should accompany manuscripts to insure their return if rejected. All articles accepted will be paid for at regular rates. Address Editor of School and Health Department of* HYGEIA, *67 Clyde Street, Newtonville, Mass.*

A DENTAL SCORE CARD FOR THE JUNIOR HIGH SCHOOL

by
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and
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A new approach in teaching is always welcomed by teachers. The authors of this stimulating article have found this new approach in oral hygiene. It involves a dental score card for use in junior high schools, which has been developed with the cooperation of teachers and dentists. Try it out in your school.

A SCORE CARD has the same kind of fascination for people as have the weighing scales. Just as few persons can resist an opportunity to step on the scales—whatever they hope to learn as a result—so also can few fail to be interested in learning about themselves what the scoring, when it is totaled, will reveal. For those who are still in the growing period the scales furnish an opportunity for measuring growth at intervals. The score card provides a similar opportunity by permitting young people to compare their records from time to time. It permits a clear, concise analysis of progress toward goals, which the score card sets up.

The dental score card which we present here is one of the devices which has been developed for use at the junior high school level. It has been found to present at this level a new and dignified approach to the subject of oral hygiene. It serves the dual purpose of renewing interest in care of the teeth and of providing a suitable piece of material for reviewing the facts relating to the subject. Moreover, at each checking it serves as a reminder to the pupils of the health practices connected with care of the teeth which are not yet well established.

The items in the score card are presented in the form of positive statements so that the desirable practices may thus be fixed in the minds of the pupils. As far as possible the items refer to the practice of habits during the previous twenty-four hours, since this is a period of sufficient proximity to permit of accurate recall. As a rule, this gives an adequate picture of the usual practice if teachers are careful to avoid having the score card checked on Mondays, on days following holidays and vacation days or on other days when for any reason the pupils' habits are likely to be upset.

MY DENTAL SCORE

[Note.—All statements except numbers 5 and 10 refer to *the past twenty-four hours.*]

	Date					
	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.
Building the teeth	21	15	10	7	4	1
1. I had a quart of milk. (15)	0	15	15	15	15	15
2. I had a green vegetable, such as cabbage, spinach or green beans, or a yellow vegetable, such as squash, carrots, or yellow turnips (10)	10	10	10	10	10	10
3. I had at least one of the following: orange, grapefruit, banana, canned or fresh tomato (15)	15	15	15	15	15	15
4. I had at least one food which required hard chewing, such as an apple, a raw vegetable or toast (10)	0	10	10	10	10	10
Safeguarding the teeth						
5. My teeth have been examined, and all necessary dental work has been completed during this school year as indicated by a dental certificate (20)	0	0	0	20	20	20
Cleaning the mouth						
6. I brushed my teeth at least twice (15)	15	15	15	15	15	15
7. I used salt as a mouth wash at least once (5)	0	0	5	5	5	5
Caring for the toothbrush						
8. I rinsed my toothbrush after using (2)	0	2	0	2	0	0
9. I hung up my toothbrush or placed it in a clean glass to allow the bristles to dry thoroughly (3)	3	3	3	3	3	3
10. I have had a new toothbrush within the last four months (5)	0	5	5	5	5	5
Total—100	43	75	78	100	98	100

Name, Jane Smith; School, Beebe; Grade and division, 7B.

In arranging the score card an effort was made to distribute the points among the items on the basis of relative importance. Experts on nutrition and dentistry were consulted for help and approval concerning the items to be included and the distribution of points.

The number of scorings made will vary with different classes. They should not be so infrequent as to permit a loss of interest between the times of scoring. Nor should they be so frequent as to allow too little time for improving practices. A check-up at intervals of approximately three or four weeks has been found to be most satisfactory.

The score card may be presented to the pupils in hektographed or mimeographed form, or the pupils may copy it on paper from the blackboard. Although the former method has the advantage of saving class time, the latter has been found to be an activity much enjoyed by the pupils and one which may therefore enhance their interest.

When the score card is first introduced it is desirable to permit the pupils to check their scores before discussing the items at any great length. The items present valuable teaching material for a review of the facts, as we have already said, but little attention will be paid to a discussion of this material when the major interest of the pupils is in checking to determine their scores. When the card has been scored and the material discussed (this may take several teaching periods), the sheet is placed in the pupils' notebooks so that it may be used for reference.

Needless to say, in the interest of securing honest self rating the pupils are made to understand that their scores, good or bad, will in no way influence their class marks, that the purpose of the score card is to serve as a "reminder" and as a means of assisting them in measuring their progress throughout the year in establishing and maintaining satisfactory dental health practices.

BODY BUILDING AND REGULATING FOODS

Calcium and Phosphorus

ETHEL AUSTIN MARTIN
Director, Nutrition Service
National Dairy Council

Are your pupils learning about the importance of calcium and phosphorus? Are they eating foods which contain these minerals? What instruction and training may be given at different age levels? These are some of the questions which Mrs. Martin helps teachers to answer in the sixth of her series of helpful articles.

THIS MONTH we take up calcium and phosphorus, two mineral elements, each of which plays a dual role of body builder and body regulator.

The body of a full grown man contains about 2 pounds of calcium, in the form of lime, and 1½ pounds of phosphorus. Most of these amounts are present in the bones and teeth and are combined in a form called calcium phosphate. The body must regularly obtain sufficient calcium and phosphorus from food, if bones and teeth are to grow and remain straight and strong. Building bone without calcium and phosphorus is like trying to make glass without sand, for these elements supply the hardness, the body and the strength of teeth and bones. From birth to maturity every bone in the body increases its size and weight many times.

The calcium in the body, in addition to that found in the bones and teeth, though small in amount is extremely important. It is present in the blood largely and is essential to such indispensable functions as coagulation of the blood and the rhythmic beat of the heart.

Phosphorus has equally important regulatory powers. It is necessary to cell multiplication and cell movement and is concerned with the proper amount of liquid in the tissues. Phosphorus also plays an important part in regulating the chemical neutrality of the blood.

Results of a Calcium Phosphorus Shortage

If there is a calcium phosphorus (and vitamin D) shortage during infancy and early childhood, bones are poorly constructed and eventually may become misshapen, as in bowlegs. This bone condition is known as rickets. Such bone deformities often remain in later years and frequently contribute to poor posture as well as to serious health handicaps.

Teeth similarly deprived of growth materials are defective in structure. And poorly constructed teeth are believed to decay more readily than well built teeth. Therefore, adequate amounts of calcium and phosphorus are important throughout life for the build-

TABLE 1.—*Calcium Values*

Foods	Servings	Calories	Calcium Units*
Milk	1 cupful	168	4
American cheese	1⅛ inch cube	100	4
Ice cream	¼ quart	200	1¾
Cauliflower	½ cupful cooked	25	1⅛
Cottage cheese	5 tablespoonfuls	100	1
Oranges	1 medium	75	1
Dried navy beans	3 tablespoonfuls dry	150	1
Grapefruit	½ large	100	½
Carrots	½ cupful cooked	35	⅓
Cabbage	½ cupful cooked	25	⅓
Onions	½ cupful cooked	50	⅓
Green peas	½ cupful cooked	50	⅓
Green beans	½ cupful cooked	25	⅓
Eggs	1	70	⅓
Prunes	2 large	100	⅓

* The term "units" is used here in an effort to indicate relative calcium values in a simple way. The value of a unit is explained later in terms of daily calcium requirements.

ing and reparative processes involved in the development and maintenance of teeth.

Foods Rich in Calcium and Phosphorus

Calcium is unevenly distributed in foods. Milk and milk products are the best sources. Some vegetables, a few fresh fruits and eggs rank next in importance.

Phosphorus is most abundant in high protein foods such as meat, cheese, fish, milk and eggs. It is also present in liberal amounts in whole grain cereals.

Dietary studies show that calcium is one of the essential elements often lacking in American meals. This fact, coupled with knowledge of the importance of calcium to growth and health, makes it highly desirable to familiarize oneself with the foods which are dependable sources of calcium. Table 1 shows relative calcium values of a few common foods, expressed in units.

A glance at the column on the extreme right of the list shows at once that milk and milk products have a relatively higher calcium value than other food groups on the list. It shows also that while eggs and certain fruits and vegetables are the next best sources they rank considerably below milk and cheese when all are taken in average servings. Many other common foods yield still smaller amounts of calcium and can be depended on to make up small deficiencies. However, the needs of the body can be met with assurance only by choosing some foods daily which yield significant amounts of calcium.

Daily Calcium Requirements

Experiments with children show that they require about fifteen units (1 Gm.) of calcium from their food daily to satisfy their needs. Adults require about ten units (0.68 Gm.) daily.

Following the plan of previous articles, let us now make a practical check on the calcium content of a specified diet. Let us see, for example, whether a girl of 10 years, needing 15 units of calcium daily, can obtain the required amount if she takes daily the "protective" foods—milk, vegetables, fruits and eggs in the quantities usually recommended. Using the preceding food list, the answer is easily obtained by preparing a table such as the following:

TABLE 2—*Suggested Daily Calcium Intake for Girl, Aged 10*

Foods	Amounts	Calcium Units
Milk	1 quart	16
2 Vegetables		
Green leafy	½ cupful	1
Root	½ cupful	½
2 Fruits		
Citrus	1 medium	1
Dried	½ cupful	⅓
Eggs	1	½
		19+

This table shows (1) that the "protective" foods, taken in the amounts specified, supply the required amount of calcium with a desirable margin; (2) that one quart of milk meets the daily calcium standard for a child; (3) that all the other protective foods, two servings of fruit, two servings of vegetable and one egg, taken together furnish less than one-fourth as much, a fact which demonstrates why these foods, important as they are in other respects, cannot take the place of milk and milk products as a source of calcium, even though they are eaten in the liberal quantities indicated. Milk has the additional advantage of providing calcium and phosphorus in easily assimilated forms and in a ratio which makes for their best utilization in the body.

Application to the Classroom

The importance of calcium to good nutrition, its frequent shortage in the diet, and the concentration of calcium in milk make a unit on milk a logical activity at this point. Suitable methods of approach can best be described at the various grade levels.

A Unit on Milk

Children in the lower grades can be taught that milk is the best food for growth and that it helps to build strong, sturdy bones and sound teeth. They have already learned that a glass of milk is part of a good breakfast and a good lunch. This rule can now be extended to include dinner, which will mean a glass of milk at each meal. The remainder of the quart can be taken in milk dishes or milk products, such as soups, creamed dishes or ice cream. Each teacher can provide a quart bottle of milk and let the class measure to see how many glasses of the size they use at home are contained in one quart. Trips to a farm or to a dairy, with word charts, drawings, sand table projects and stories to follow up the trips, add greatly to the interest in a milk unit.

Older children will be interested in evidence that calcium and phosphorus are necessary for good bone development. Pictures of experimental animals that have been fed on high and low calcium diets with corresponding pictures of the skeletons of the same animals are convincing. The animal receiving plenty of calcium will have a large, white, strong frame in comparison to the small, gray, frail skeleton of the other animal. Children may raise the animals (white rats) themselves, one rat having a diet including milk, the other the same diet but excluding milk. With supervision the bones may be recovered at the close of the demonstration and used for display purposes before the class. With this convincing prelude, children will become interested in their own teeth and bones and will not need to be persuaded that milk should be a part of their meals regularly.

There is a tendency in the adolescent years for boys and girls to feel that milk drinking should be dropped along with other childhood habits. At this level, therefore, it is desirable that evidence be presented as to the value of milk in perfecting their full growth and physical maturity. Animal experiments such as those suggested for the middle grades are convincing. In addition the children can be told true stories of whole groups or races of people who have good or poor teeth and are stalwart or stunted depending largely on the calcium content of their diets. They can be interested in an activity in which they undertake to improve their own teeth. In this activity they will take adequate amounts of milk, green vegetables and fruits; they will visit the dentist regularly to forestall decay and by regular cleaning and care of their teeth they will improve their personal appearance.

(Continued on page 188)

TO AMERICA'S SCHOOLS—YOUR HEALTH (Continued from page 162)

the valves and inner lining. The valves thus affected will leak instead of closing tightly, and thus they will make extra work for the heart.

2. Diseases which poison the heart muscle, like diphtheria. When the heart muscle is too badly injured, it fails altogether. When it is able to make a partial recovery, there may be later disability.

3. Habits which poison the heart muscle, such as the use of alcohol, and in the case of some persons tobacco.

4. Chronic diseases which injure the heart, either the muscles, the valves or both, and the inner lining of the heart. Syphilis is an example of this.

5. Deficient filling of the heart. This is almost always due to causes and factors occurring outside the heart itself. Pressure may be exerted on the vessels entering the heart by masses located near the heart as well as by the appearance of fluid between the heart itself and the outer covering (pericarditis).

6. As a result of repeated attacks on the outer covering of the heart, adhesions between the covering and the heart occur as well as a thickening and roughening of the inner lining of the outer covering. It is in this condition that remarkable results are frequently obtained by direct surgery on the heart.

7. Overweight, which makes the heart work overtime. Strain and worry are worse than physical work.

Ways in which the heart can be protected include:

1. Prompt medical care for all illnesses, and cooperation with the doctor, who says that convalescence should be prolonged even beyond what may please the patient. Hurrying up the recovery too much after acute infectious disease favors heart injury.

2. Prevention of diphtheria.

3. Avoidance of the excessive use of alcoholic beverages or the use of tobacco by persons who ought not to use it.

4. Precautions against industrial poisons like lead.

5. Moderation in eating to avoid overweight and overloading the circulation.

Older persons whose heart muscle is not in good condition should avoid strenuous sports to which they are not accustomed.

Persons who have injured hearts need not despair and give up. The heart is a game fighter which never gives up until it is really licked. It has considerable reserve power. When it is put at a disadvantage by leaking valves or injured muscle, it responds by enlarging in an effort to take up the extra load. For a while all goes well. Then the extra effort becomes too great, and the heart falters. The object of living, for a person who has an injured heart, is to regulate life so that this point is never reached. The danger signal in heart disease is breathlessness. The person with severe heart failure is breathless lying in bed and doing nothing. The person with milder heart failure may be breathless only on certain exertions, such as climbing more than a certain number of stairs, climbing any stairs too fast or running. Whatever brings about the breathlessness should not be done any more. Other signs of heart disease may be swelling in the lower limbs, especially toward the end of the day, or pain in or near the heart. These indications should not be confused with symptoms that may occur normally: Even the normal person becomes breathless on severe or unaccustomed exertion; the person with heart disease becomes breathless for much less cause.

A good plan of living for persons with heart disease includes the following points:—

1. Learn your physical limitations, accept them, and keep within them.

2. Stop all exertion short of breathlessness if possible; if not, quit at once.

3. Do not run for street cars or up stairs. Climb stairs as seldom as possible; always use elevators if available.

4. Avoid colds and other infections which may further damage the heart or throw on it the strain of a serious illness. When you have had a cold, go to bed and stay there until the doctor allows you up.

5. Dress warmly but loosely.

6. Eat moderately, and keep the weight a little below normal.

7. See a doctor from time to time to examine your heart, but do not pay too much attention to your heart. Don't be a pulse-counter on yourself.

8. Avoid alcohol in excess or altogether, as your doctor advises. Avoid tobacco if the doctor advises.

9. Avoid emotional upsets and anger. Be calm.

10. Respect the necessities of your heart, but do not let it spoil your enjoyment of life.

REFERENCES FOR TEACHERS

Texts previously suggested.

THE HEART AND ATHLETICS by F. Deutsch and E. Kauf. Price, $2.50. St. Louis: C. V. Mosby Company, 1927.

WHAT YOU SHOULD KNOW ABOUT HEART DISEASE by Harold E. Pardee. Price, $1.50 Philadelphia: Lea & Febiger, 1935.

SUGGESTED PROJECTS

1. Get a beef heart from the butcher. Note its size and shape and the weight of its muscular structure. Notice the large veins coming out of the base. The veins are the vessels with thin walls. Note the arteries, the thick elastic-walled vessels. Insert a sharp knife in one of these vessels, and carefully cut the heart open. Notice that there are four chambers, two on each side. Note the thin walls of the upper chambers which receive the blood from the veins and the thick walls of the lower chambers which pump the blood through the circulation. Note the valves: between the upper and lower chambers the delicate valves with the fibrous strings which control their closing; at the openings of the large arteries the pocket-like valves which close these openings while the lower chambers refill with blood for the next beat.

2. Choose several members of your class, and have some one count the pulse on each and record this. Then have these students exercise for one minute by the clock (running in place, running up and down a flight of stairs, shadow boxing). Immediately at the end of the exercise, count the pulse. Wait two minutes by the clock; count the pulse again. Note how rapidly the pulse returns to normal. Choose one or more pupils to lie down immediately after exercise, and note any difference in the pulse rate. Is there any difference between the pulse rates of a boy and a girl? In an athlete? Never "take a pulse"—counting the rate—

with your thumb. Use three fingers on the wrist at the thumb side of the patient's wrist, with his palm up.

February 16: Don't Fear Cancer; Fight It.—Cancer is a disease with which most young persons will have little to do directly, except as it affects them through the possibility that parents or other relatives may be afflicted; but there are forms of cancer which can affect the young.

The word "cancer" includes a number of different but fundamentally similar conditions. It is a wild and uncontrolled growth of cells. The body is composed of fine units called cells, which require a microscope to be seen. These cells normally grow and multiply while the body is growing or when injury has occurred and there is healing to be done. When they have reached normal size, shape and development, or when repair is complete, the cells of a normal body stop growing. Cancer cells, on the other hand, keep on growing indefinitely. They invade and destroy tissues nearby, or wander to distant parts of the body, where they start new cancers. And finally they produce death.

For many years, cancer was a word which was regarded as a death sentence. Now we know that cancer is curable under certain conditions, even though we do not know much about the disease itself as yet. In brief, here is what we do know:

1. All cancers begin locally. When completely removed while still localized, they do not return.

2. While the final and real cause of cancer remains undiscovered, certain facts are known which tell much about conditions under which cancer is most liable to appear. Wherever there is chronic and repeated irritation, cancer is liable to develop. A rough tooth irritating the tongue or cheek, the constant irritation of clay pipes on the lower lip, the irritation of a plug of tobacco in the cheek, a mole which is constantly irritated by clothing or by shaving over it, repeated inflammations as in ulcers of the stomach or intestines, the carrying of hot coals in a vessel under the clothing as is done by certain Oriental peoples—these are conditions which favor cancer. Yet not everybody who permits such conditions to occur acquires a cancer; nobody knows the explanation for these facts.

3. Early signs of cancer are the following: a lump that grows, a sore that fails to heal or heals and comes back again and again in the same place, or any abnormal discharge or bleeding from the body. Note that pain is not among the early signs! As a rule, when a cancer begins to give pain it is too late to do anything about it.

4. Early and complete removal results in cure, if done in time to prevent spread from the original site. Operation, x-rays or radium, or combinations of these measures as the needs of the patient may require, are the only successful means of treating cancer.

5. Cancer pastes, cancer serums or any means of treatment other than surgery, radium or x-ray are worthless. Anything that such methods may seem to cure is positively not cancer.

Knowing that early cancer can be cured, as proved by records of 25,000 cases in which patients have been cured and have remained alive for five, ten or fifteen years after removal of proved cancers, an educational campaign has been carried out in the United States by the American Society for the Control of Cancer in conjunction with the General Federation of Women's Clubs, the medical and dental professions and public health agencies, to teach people:

1. Not to be ashamed of cancer and not to hide it.

2. To learn the early signs and go to a doctor at once.

3. In middle age, to go to a doctor regularly for examination even in health, to forestall disease, including cancer.

4. To recognize fakes and to rely only on surgery, x-rays and radium, as ordered by a competent and reputable physician.

REFERENCES FOR TEACHERS

Texts previously suggested.

CANCER: WHAT EVERY ONE SHOULD KNOW ABOUT IT by James A. Tobey. Price, $3. New York: Alfred A. Knopf, 1932.

SUGGESTED PROJECTS

From your local health officer or state health department, get the figures as to how many persons died of cancer in your state last year. How many ten years ago?

In your local community, find out how much radium is available and where it is; or where the nearest available radium is.

Ask your local doctors to tell you, without revealing names, how many patients they know personally who have been operated on for cancer five years ago and still live. Ten years ago? Fifteen years ago? If it can be done without identifying the person, ask physicians to give some interesting facts of accomplishment after having a cancer removed, for example:

A public health nurse, having worked for a number of years in promoting the health of the public, married. Within a few months it was discovered that she had a cancer. Because she knew exactly what to do, she went to a doctor at once. The condition was recognized and removed. Since that time she has lived ten years and is in perfect health today. She has two fine children, aged 6 and 8 years.

There are 25,000 and more stories just like that. The most important lesson for young people to learn about cancer, and never to forget as they grow older, is that early cancers, completely removed, are curable but only by the use of surgery, x-rays or radium.

February 23: Overcoming Diabetes.—Diabetes is the name given to failure of the body to use sugars and starches in a normal manner. It is a condition which is most common in middle aged persons but most serious when it occurs in children. It is of special interest because of the progress which has been made against it within very recent times. The story of diabetes today is entirely different from the story of diabetes before 1922.

For many years it has been known that there was a disease in which sugar escaped from the body through the kidneys and that this was accompanied by great thirst, great hunger and increasing weakness with a tendency toward sudden unconsciousness and death. Persons suffering with this condition could sometimes be helped by keeping their diet low in sugar. In other instances, nothing would help them. Children invariably starved to death in a few short months. Today there is seldom a case of diabetes that cannot be controlled by correct diet, exercise and a life saving treatment which was discovered in 1922.

Study of the workings of human and animal bodies has shown that the ability to use sugar depends on a gland located in the upper part of the abdomen, close to the stomach, and called the pancreas. In animals it is called sweetbread. It is the gland that furnishes digestive juices to the intestines; but it also has little islands of cells not connected with the digestive juices, and these have been proved to be responsible for keeping the sugar exchanges of the body straight. From these cells of the beef pancreas is made a preparation which can be injected into the body and which will take the place of the absent substance which the pancreas of the diabetic person fails to produce. It is called insulin because it comes from the island cells in the pancreas.

Insulin is a substitution for the normal activity of the pancreas. It does not cure diabetes but simply supplies a missing substance. It must be taken every day, sometimes once, sometimes two, three or more times. A chemically modified form, recently introduced and known as protamine zinc insulin, has a more

(Continued on page 184)

QUESTIONS and ANSWERS

Respiration

To the Editor:—Does the lower part of the abdomen move out or in normally with inspiration? Does this vary in sitting or standing? Does it depend on whether the breathing is diaphragmatic or otherwise? What is the significance of the two types of breathing?

L. S. C., New York.

Answer.—The abdominal wall moves out with inspiration under most conditions. If the abdominal wall moves at all in true costal (chest) breathing, it is most likely to be retracted, though not invariably. When sitting, there is no typical change from standing except that the magnitude of excursion is not likely to be so great.

There is little significance to be attached to the two types of respiration in normal individuals; actual behavior depends largely on training or previous habits, such as dress. When women more commonly wore corsets it was said that costal breathing characterized the female, the abdominal type the male. The modern woman, however, except in pregnancy, breathes abdominally quite as commonly as the male. Trained athletes of either sex usually show greater excursions of both the chest and the abdominal wall than do untrained persons. The type of breathing has practically no influence on the efficiency of the lung in quiet respiration. In exertion, both trained and untrained people of both sexes depend more on a greater chest excursion to meet the emergency.

Diabetes: Protamine Insulin

To the Editor:—What is considered a complete control of a diabetic condition? Does it imply, besides maintaining health, strength and weight, a complete elimination of urinary sugar throughout the twenty-four hour period? Is a certain amount of urinary sugar permissible at times? When using Haines qualitative testing solution, what amount of sugar, expressed in drops of urine necessary to cause a positive reaction, would be considered dangerous? When using protamine insulin, is it necessary to include only the more slowly absorbable starches, such as vegetables and fruits (10 per cent) in the diet, or is a certain amount of more concentrated starch, such as bread, allowable? Under the regimen of one dose of protamine insulin per day, what is the usual division of carbohydrate between the three meals? Is it necessary to supplement a small unmodified dose of insulin with the regular dose of protamine insulin in a number of diabetic cases? Does protamine act effectively during minor infections, such as colds?

H. H. S., Wisconsin.

Answer.—Complete control of a diabetic condition would mean the cure of diabetes, and that one cannot expect. Theoretically, it is not desirable to have a gram of sugar in the urine; but if 95 per cent of the carbohydrate in the diet is utilized and only 5 per cent is lost, that is doing well. For a small percentage of patients with severe diabetes, it may be necessary to allow small amounts of sugar to appear in the urine in order to avoid insulin reactions.

There is no danger zone based on the amount of sugar in the urine. In general, the more sugar, the greater is the danger, but this is by no means always the rule because patients with coma may not have a great deal of sugar.

The inquirer has confused foods which are high in starch with those which are slowly absorbed. These two properties of foods may, but do not necessarily, go together. In general, slowly absorbable carbohydrate is safer than that which is rapidly absorbed, and this is even more true when protamine rather than unmodified insulin is used. However, quickly absorbable carbohydrate in the form of fruit and fruit juices is desirable in definitely prescribed amounts. Furthermore, most diabetic persons can tolerate moderate quantities of food high in carbohydrate such as bread and potatoes.

There is no absolute rule for the division of carbohydrate when using one dose of protamine insulin before breakfast. Many doctors give carbohydrate one-fifth at breakfast and two-fifths at noon and at night; but if the blood sugar is normal or even subnormal before breakfast, it might be well to divide the carbohydrate for the day into thirds. Each case is a problem unto itself. In general, with protamine insulin an earlier breakfast and a later evening meal are recommended. Spreading the food out over the waking day is desirable and can be accomplished by giving midmorning, midafternoon and bedtime lunches of 5 or 10 Gm. carbohydrate.

With present knowledge it would appear definite that a certain small number of diabetic patients require regular as well as protamine insulin before breakfast.

Protamine insulin undoubtedly acts just as effectively as regular insulin in the case of an infection, but often regular insulin may be added with advantage before the noon and night meals or, if the patient is eating at irregular hours, may be given by the clock every three, four, six or eight hours.

If you have a question relating to health, write to "Questions and Answers," HYGEIA, enclosing a three-cent stamp. Questions are submitted to recognized authorities in the several branches of medicine. Diagnoses in individual cases are not attempted nor is treatment prescribed. Anonymous letters are ignored.

Snakebites

To the Editor:—In the case of a bull snake and a rattlesnake crossing, would the bite of a poisonous snake still be two marks or might it be a number of scratches as characterized by the bite of a nonpoisonous snake?

P. G., Wyoming.

[EDITOR'S NOTE: The following answer has been received from a nonmedical authority in this field.]

Answer.—We have heard allegations of bull and other harmless snakes cross-breeding with rattlesnakes but think such assertions are based entirely on imagination and that hybridization of such unrelated types is impossible. During a period of over thirty-five years, I have examined thousands of snakes of all kinds and have never seen a specimen with the remotest hint of such cross-breeding. I think that occasional snakes, with variant color patterns, might give rise to these allegations; also the fact that some harmless snakes vibrate the tail in simulation of rattlesnakes, thus producing a buzzing sound if the tail beats among dry leaves.

New Books on Health

DIABETES: A MODERN MANUAL

By Anthony M. Sindoni Jr., M.D. Cloth. Price, $2. Pp. 240. New York: Whittlesey House, McGraw-Hill Book Company, Inc., 1937.

TO THE long list of diabetic manuals already available, Dr. Sindoni adds another volume. There is place for another book on the management of diabetes only if it contains new authoritative information or presents old information in an improved form, or meets the special needs of certain clinics.

While different clinicians inevitably disagree concerning the details of diabetic management, there are some points in this book which some clinicians may find it difficult to accept: for example, the author's treatment of severe hypoglycemic reactions by rectal administration of sucrose is open to question, as is also his advice to call the doctor for every insulin reaction. He tells the diabetic patient to test the urine only two or three times a week when he is well and once a day when he is sick; this is clearly not often enough to insure against serious trouble in some cases. The discussion of protamine zinc insulin reflects the generally uncertain state of present knowledge of how best to apply this new method of therapy.

The author's method of administering insulin after, rather than before, meals is mentioned in the preface as the most significant contribution to insulin therapy in this volume. Unfortunately, the value of this method is not established by sound evidence.

In favor of the book it can be said that it is effectively organized under three headings: (1) questions asked the physician by the person who has diabetes, and the answers; (2) what to know, and (3) what to do. In the second division are numerous good recipes, although the method of planning the diet is complicated. The material on the metric system is well presented, and the technic and reasons for weighing foods are well stated. In the last division the treatment and prevention of acidosis and coma are too lightly considered in less than two short pages.

R. G. SPRAGUE, M.D.

SEX LIFE IN MARRIAGE

By Oliver M. Butterfield. Cloth. Price, $2. Pp. 192. New York: Emerson Books, Inc., 1937.

THIS book is one of a great many recently published on this subject. It is neither the best nor by any means the worst. It was written by a minister rather than by a physician, and in certain respects this is probably a good thing because the problems that arise in the development of family life do not usually require learned discussions of anatomy, physiology and pathology. They are rather, as a rule, problems requiring an adequate philosophy of life. Probably the greatest need for a couple contemplating marriage or already engaged in marriage is that they should take such an attitude toward this subject as will permit them to seek and find information wherever it may be available. Obviously it is impossible to teach the man who thinks that he already knows all there is to know. Books of this sort undoubtedly serve a useful purpose both for those who have yet to learn and for those who have learned wrong. The present book is probably better in the latter connection.

THURMAN B. RICE, M.D.

TEN MILLION AMERICANS HAVE IT!

By S. William Becker, M.D. Cloth. Price, $1.35. Pp. 220. Philadelphia: J. B. Lippincott Company, 1937.

THIS book is a compilation of the facts relating to syphilis. It is a concise, clear, complete, practical exposition of the subject, free from hysteria and sensationalism. It should serve as an excellent summarization of the subject for the use of interested lay persons, including especially teachers, club women and P. T. A. officers. The chapters on diagnosis and treatment are perhaps a trifle technical, but this may have been inevitable, since they deal with technical phases of the subject.

The book should do good service in dispelling unfounded fears leading to syphilophobia, without at the same time giving ground for a casual attitude toward a disease as serious in its potentialities as syphilis. It should help, as much as any book can help, to wean the public away from quackery and charlatanism and to influence them to rely on the only means for the successful eradication of syphilis; namely, prompt recognition and continuous energetic treatment.

W. W. BAUER, M.D.

CARE AND DIET OF CHILDREN

By Harry S. Reynolds, M.D. Cloth. Price, $2. Pp. 154. New York: Fortuny's, 1937.

THE material in this book, covering the subject of child care, is presented in the form of questions and answers. It is intended to represent a practical handbook on the care of infants and younger children. Similar books have been made available at various times.

Unfortunately, many of the answers to questions given are somewhat dogmatic and misleading and, in other instances, are written in a style which most mothers will not easily understand. Furthermore, some of the answers given are not in accordance with generally accepted pediatric practice, particularly the suggested use of calomel in the treatment of colds in infancy.

WILLIAM I. FISHBEIN, M.D.

BIOLOGICAL TIME

By P. Lecomte du Noüy. Cloth. Price, $2. Pp. 180. Illustrated. New York: The Macmillan Company, 1937.

THIS book, interesting as it is for the reports of the studies on biologic time as distinguished from physical time, is even more interesting for the insight which it furnishes into the workings of the scientific mind. The author is not content to analyze his problems and present their solution, but he must, as it were, depart out of himself and look at the processes of his own mind, by which he arrived at the solution of his specific problems, with as impersonal a regard as he would the reactions of an ameba under his microscope. Not only the reports of his work but how and why he was moved to do what he did in just the way he did, is set forth in this self revelation of a scientist.

The phenomena of biologic time, ("when compared with physiological time, physical time loses its uniform value. Parents and children live in different temporal worlds . . . the value of a day is much greater for a child than for its parents . . .") are interesting and important. But more interesting is the story of how one discovery moves the mind of the scientist to speculation as to reasons why, then to observation and experiment and so to new discovery, new conjecture and new efforts to push aside the veil. The spirit of the investigator to whom modern science owes its imposing assemblage of new facts is well shown forth in this book. The studies on wound cicatrization and tissue culture in vitro and their study with the aid of the motion picture camera make interesting and valuable reports and form in part the basis for the deductions with respect to biologic time which constitute Part 3 of the book and furnish its title.

The principal conclusion of the author is embodied in the following paragraph:

"Consequently, there are two kinds of time. One corresponding to the classical notion, the sideral, physical time, without beginning and without end, flowing in a continuous, uniform, rigid fashion. The other, the physiological time, the duration of our organism, which begins and ends with us, and which does not affect identically in our youth and our old age the phenomena of which we are the seat. It is a time which remembers. It is no longer the impersonal, rigorous time measured by the rotation of the earth, the immutable and arithmetical time in which the universe evolves. Its flow seems to be submitted to periodical fluctuations. It rebounds with each germ: a living time."

The demonstration that aging of the body is a function of the blood serum and seems to be due to increasing toxicity of the serum is important and interesting. Finally, the significance of tissue culture studies and the study of living cells with respect to its possible bearing on cancer indicates the potentially practical bearing of this research.

W. W. B., M.D.

HOW TO MAKE CANDY

By Walter W. Chenoweth. Cloth. Price, $1.40. Pp. 212. Illustrated. New York: The Macmillan Company, 1936.

THE writer of this book has for years conducted a course in candy making for college seniors and graduate students at Massachusetts State College. The material of the book is so organized as to make it a useful textbook for the teaching of candy making as well as a valuable guide for the home candy maker. The basic procedures are discussed in a nontechnical although entirely scientific manner. The composition and uses of the materials commonly employed in candy making, such as the various sugars, syrups, milk and milk products, gelatin, gums and flavoring materials, are briefly discussed, and simple but useful equipment is described and illustrated.

The various technics of testing, cooling, kneading, pulling, molding and dipping are carefully explained, considerable space being devoted to the important topics of the theory of crystallization, practical methods for the control of crystallization and the technic of preparation of various cast and dipped confections such as cream mints, bonbons and chocolate coated candies. Recipes and specific directions are given for making a wide variety of confections including the different types of fudges, caramels, taffies, brittles and hard candies and various specialties such as popcorn confections, after dinner mints, marshmallows and salted nuts. The book is intended primarily for those who enjoy candy making as a hobby; but the author, having also in mind the needs of the home maker who may find in candy making a pleasant and profitable part time or full time employment, has included a chapter of valuable practical suggestions for any one who wishes to enter this field. The book is well illustrated throughout and contains a useful and well organized appendix, glossary and index.

RUTH COWAN CLOUSE.

FAMILY BEHAVIOR

By Bess V. Cunningham, Ph.D. Cloth. Price, $2.75. Pp. 471. Philadelphia: W. B. Saunders Company, 1937.

THE author states that "this book is intended for the student of college age who is interested in obtaining an improved perspective on the family group." The first part of the book is concerned with orienting the reader to the significance of the family and the methods by which family life may be studied. The second of the four sections deals with the family in its social setting among neighbors and in a neighborhood. There is discussion of community organization and community institutions in contemporary American life. The third section is devoted to problems of adjustment of the family: economic, occupational, recreational and ethical. These three sections are abundantly supplied with statistical material and illustrations.

The fourth and final section of the book is entitled "The Nurture of Personalities." This section is evidently the one which has interested the author most and appears to be the most valuable. It contains a thoughtful and thought provoking consideration of intrafamily relationships from the point of view of their effect on the personalities of the members of the family, particularly of the children. In contrast with numerous books dealing with this subject, this book is balanced and sensible yet penetrating, stimulating yet not given to too great flights of fancy. The point of view is that of an exponent of the modern democratic family which seeks to prepare itself for successful cooperative living and for independent and critical thinking rather than blind obedience to authority. Informed and fair minded persons who accept this objective are likely to find little with which they can quarrel and much which they can commend. Intelligent parents interested in a thought provoking yet sensible discussion of family problems will find it wholesome and valuable.

The style is simple, perhaps sometimes too simple, but lucid and readable. The organization seems a little choppy in places, and for the nonstudent reader the continuity is somewhat further disrupted by the suggestions for further study and reading at the end of each chapter.

R. L. JENKINS, M.D.

[NOTE.—Books reviewed or mentioned in this section, other than those published by the American Medical Association, should be ordered from booksellers or direct from the publishers. They may not be ordered through HYGEIA or the American Medical Association.]

MODERN MEDICAL CHARLATANS: II (Continued from page 115)

to a certain extent be made to order if parents desiring a boy will eat large quantities of vitamin E in addition to an otherwise balanced diet. The evidence is said to be based on 7,000 rat experiments. What a jolly time these rats have in the interests of science! Of course the experimenter is bound to be right half the time.

Scientifically, there is as yet no vitamin designated as vitamin F. Yet according to the investigators, their vitamin F will prevent such symptoms as scaliness of the skin, inflammation of the tip of the tail, dandruff, baldness and failure to mate among males—that is, in rats. And since it will do these things in rats, they argue, why not try it on human beings? Hence all the announcements in the ladies' magazines about vitamin F for preventing scaliness of the skin, dandruff of the scalp and some of the other symptoms that ladies—not rats—complain of. And so with pseudoscientific jargon and flamboyant announcements, the alleged vitamin F is now promoted by various agencies. There is no reason why any one should take it seriously.

John R. Brinkley

In John R. Brinkley, quackery reaches its apotheosis. Without anything resembling a real medical education, with licenses purchased and secured through extraordinary manipulations of political appointees, and with consummate gall beyond anything ever revealed by any other charlatan, Brinkley has achieved an enormous success financially. He continues to demonstrate his astuteness in shaking shekels from the pockets of credulous Americans, notwithstanding the efforts of various governmental departments and agencies.

He claims that he was born in Beta, N. C., in 1885. He claims that he was educated in Milton Academy in Baltimore, and he reveals letters on the stationery of that academy signed by a man on whom at one time he grafted the glands of the goat. Strangely enough, at the same time that he was supposed to be at that academy, according to his own statements he was also a traveling relief agent for the Southern Railway Company and an employee of various other railroads. How he leaped from place to place and went to school at the same time, deponent sayeth not.

In 1908 he enrolled in the Bennett Medical College, Chicago, where apparently he visited for three years. Then he left that institution and finally got a diploma from the Eclectic Medical University of Kansas City, Mo., and the Kansas City College of Medicine and Surgery, a diploma mill.

No one knows where he was between the time when he left Bennett and the time when he got his diploma. Somewhere in between he got a divorce from his first wife. Somewhere in that same period a man with the same name was arrested in Tennessee and charged with forgery. Brinkley says that at that time he was in the National University of Arts and Science at St. Louis, but his name does not appear as a student. Eventually, however, he appeared with a statement of study and graduation from that institution, signed by a man who later admitted that he had issued it for a cash consideration. Thus his record of education is full of chicanery and deception. From time to time the statements that he has issued on this subject have been without any resemblance to each other.

In 1920 he was arrested for selling liquor and sentenced to pay a fine of $300 and to spend ninety days in jail. In the end he merely paid the costs of the trial, although he pleaded guilty. In the same year he came to Chicago, where he performed several of his so-called rejuvenation operations. When the Department of Registration and Education looked into his record he left the state.

In 1921 he got a license from the Connecticut Eclectic Board, which later was found to be issuing licenses rather at random, and in 1923 Brinkley's Connecticut license was revoked. For the next few years he was doing gland operations in various places, and in 1924 he was indicted in California on a charge of conspiracy to violate the medical laws of that state. About this time the Royal University of Pavia granted him an honorary diploma which later the university annulled. Apparently he had been able to convince the Italians in Pavia of his scholastic and scientific attainments.

In 1926, Sunday newspapers suddenly appeared with a magnificent write-up of the rejuvenator who preaches and who practices goat gland science. The article said that the famous surgeon combined old-time religion with new-fangled operations on a strange medical gospel farm in Milford, Kan., and here the career of Brinkley as a giant in quackery begins to develop. He had come to Milford when it was just a wide place in the road, gotten for himself a radio station called KFKB, and then he began to announce to the world far and wide the marvelous operation which he called the compound operation and which he claimed was "the best thing known for impotency, high blood pressure, and large prostate, sterility, neurasthenia, dementia praecox or any disease that is not malignant of the prostate."

In the Brinkley performance the patients came in on Monday and were required to leave on Friday. He never wanted next week's patients to know what last week's patients were doing. His usual fee was $750, but a gland of a very young goat might cost as much as $1,500, all of this notwithstanding the fact that there is not the slightest evidence that the glands of a goat can be successfully transplanted into the body of the human being. He claimed in an interview in 1930 that he was receiving 3,000 letters a day, building a sanatorium at a cost of $100,000, an apartment house for his employees and several bungalows for his doctors and their families. He had four motor cars (one a $7,000 Lincoln), and he had given to Milford as a gift the Brinkley Methodist Memorial Church, which was "Erected to God and His Son Jesus in appreciation of the many blessings conferred upon me, By J. R. Brinkley."

When the American Medical Association exposed the development of the Brinkley interests, including the Brinkley Pharmaceutical Association, the Federal Communications Commission decided to give him a hearing and then refused to renew his broadcasting license. The Brinkley Pharmaceutical Association was composed of druggists who dispensed medical preparations. These preparations were prepared according to formulas of Brinkley and were recommended in broadcasts over the radio of the Brinkley Medical Question Box. The broadcaster would read the letters received from sick people and then tell them to get "Woman's Tonic No. 50, 67 and 71" or "Men's Prescription No. 60, 87 and also No. 64." The prescriptions were common preparations of ordinary drugs sold under these numbers with the understanding that the druggist would keep a large portion of the money and send the remainder to Brinkley for advertising the preparations. Thus the doctor prescribed treatment for a patient whom he had never seen, basing his diagnosis on symptoms recited by a patient in a letter, and recommending secret preparations on which he shared a part of the profit.

The high point in the Brinkley performance was his candidacy for governor in the state of Kansas.

(Continued on page 182)

YOUR AGE and YOUR HEART

(Continued from page 158)

They also may be a constant source of danger to others, and it is slowly bringing serious harm to their heart and blood vessels."

In Scandinavian countries the campaign against syphilis has been carried out far more extensively than in this country, and it is only a question of time when heart disease of this type will be rare indeed in the population of those countries. Here then is a real point of attack: To wipe out syphilis is to obliterate syphilitic heart disease.

Other causes of heart disease may be too much or too little thyroid—and nerves! Too little thyroid appears to damage the heart, for it becomes large and flabby and lazy like the rest of the body. Prevention of permanent heart damage in this group must be by giving the patient thyroid extract. Too much thyroid makes the heart work too hard, speeds metabolism, and, if this is kept up too long, the heart breaks down from being driven too hard. Damage to the heart can be prevented by removing part of the thyroid gland and thereby diminishing its activity. This "goiter" type of heart disease has a considerable spread through the decades.

Mention must briefly be made of nervous persons. No decade escapes its form of nerves, but perhaps the "fortyish" person best illustrates this form of heart trouble. There is certainly a large group of heart disorders dependent to a great extent on the relation of the nervous system in one way or another to the action of the heart. While this constitutes disorder of *function*, it is very real to the sufferer. These nervous effects on the heart are unpleasant, such as palpitation and breathlessness, but there is no structural indication of damage to the heart.

Thanks to science, infectious diseases are more or less controlled. As a result of toxoid, diphtheria is increasingly rare in large cities, and we are now seldom able to observe its effect on the heart. Diphtheria does not affect the heart directly but only indirectly, through its toxic effect. Tuberculosis, when it affects the heart, involves the covering, the pericardium. The arrangement of the covering around the heart may be likened to a boy pulling a skating cap down over his head. Just so does the pericardium enclose the heart, and when that part of the heart becomes inflamed the condition may be serious.

There are infections that do not damage the heart, such as measles or chickenpox. It is still a matter of uncertainty whether influenza really affects the heart. In 1918, when influenza was particularly virulent, there was probably a certain amount of heart disease due to it. In the winter of 1936-1937, when the influenza was mild by comparison, it is a question whether the heart of any one was involved except indirectly.

After the fourth decade comes the "Number 1 Problem," the big group which suffers with arteriosclerotic heart disease. This is fallow ground for a heart disease prevention campaign.

What do we know about arteriosclerotic or degenerative heart disease? There is some hereditary factor, for it seems to follow a distinct pattern. Therefore, first study your family history to find out whether you can judge from the past experience of one of your relatives what you ought to do to prevent degeneration of your heart at a relatively early age. That is one thing to do. Certain persons seem to be born into this world with a tendency to have their arterial system degenerate prematurely. If that degeneration occurs in the heart, a weak heart muscle develops at an earlier age than usual. The question is how to find out whether the person has such a constitution and what can be done toward prevention.

In this tendency to degeneration of the blood vessels, one of the things that frequently occurs is an increase in blood pressure. This usually occurs before there is any stress or strain on the heart. The increase in blood pressure happens first and damage to the arteries later. For a long time the heart may be able to stand the increased blood pressure before giving any symptoms of wear and tear. But eventually the heart joins the parade as well. The cause of high blood pressure is unknown at this time.

Now so far so good. We know that there is a type of person in whom arteriosclerosis is handed down like the family fortune. There is also the known fact that many of these persons are prone to high blood pressure. Therefore the intelligent thing to do from the preventive standpoint is to test out in early life each person's tendency to high blood pressure in middle age. Lately there have been studies along this line which, though not conclusive, at least constitute a step in the right direction. The test is simple and is done by placing the person's hands in ice cold water and noting his blood pressure reaction to this stimulus. It may be a fact that those who overact to this stimulus may be the ones who have a tendency to high blood pressure. This is a valuable point of view because if a person is known to have such a tendency, his life program can be planned a little more definitely. Perhaps proper treatment could prevent the disorder in such persons from reaching the serious point. It is along this line of investigation that science is seeking means of preventing this type of heart disease. The heart problem of middle life after all is the great problem of prevention.

If you know that you have a susceptibility to early aging, before the actual symptoms arise, plan a way of life to prevent such an early breakdown. Never forget the importance of periodic health examinations. In them you have not only the benefit of the examination but the value of technical records for comparison. Periodic health examinations should be made whether or not there are symptoms. Swelling of the feet often brings a person to the cardiologist. Another sign is of course high blood pressure. And many persons feel that the state of the blood pressure is the test of good health, for today instead of telling you to "stick your tongue out," the doctor usually says when examining you, "I want to take your blood pressure." But here your hopes must be dashed! For even though your blood pressure is average there may still be something wrong with your heart. In other words, emphasis has been so directed to blood pressure that if a man finds his blood pressure passes muster, he thinks his heart is all right too—and goes no further.

Insurance companies can give the public many valuable hints about prolonging life. For instance, the three barometers considered by insurance companies for good health and a safe risk are the blood pressure, the heart sounds and the kidneys (examination of the urine). If they find heavy weather by any of these barometers, they then make a more elaborate examination of the heart, which now invariably includes the electrocardiogram, the photograph of the electric impulses of the heart.

In general a good blanket rule for humanity would be an apt saying recently noted: "If more people had a periodic examination from 40 on there would be fewer sudden deaths at 50."

What other means can we devise to protect middle age from heart disease? It has been said that many fat people have arteriosclerotic heart disease and that obesity and high blood pressure are

(Continued on page 178)

"I'M NOT AFRAID of CANCER!"

(Continued from page 140)

thwarting of my dreams and hopes. Until that April I had been too blind to see that lots of folk in this world were carrying enormous crosses and being brave about it. It was time, perhaps, that sorrow took my hand.

My world had been such a merry, painless one. I had all the beaus I wanted. My hair curled naturally. I liked the looks of myself in the mirror. I had had piano and violin and dancing lessons and lovely clothes. We were, as they say here in New England, "not rich but in very comfortable circumstances."

Up to then my days had spun happily by in an atmosphere of harmony and contentment. I think we had porterhouse steak five times a week, and turkey and ice cream were no treat at all. I used to weep over the "Five Little Peppers and How They Grew" and wondered how they ever *did* grow on cold potatoes and diluted milk. The children in our house never heard a discussion over grocery bills. We had Hester, jack of all household trades, and I never even had to help her wipe the supper dishes or make my own bed.

In school I was neither a star pupil nor a dunce, with the worries attendant on each. A favorite uncle of mine, way back in 1914 when my father had expressed displeasure at the report card I brought home, coached me to observe to him that Woodrow Wilson stood forty-first in his class at Princeton. And Woodrow Wilson was doing very nicely as President of the United States!

The World War went right over my head. I didn't even have a relative who went to France, but I do remember vividly the day the Armistice was signed. Margaret, Caroline, Nan and I were in the sixth grade, and we dashed around to all the belfries in town and decorated our porches with bunting and rode our bicycles in a parade.

Perhaps if there had been more heartaches in my childhood, I would have been through a better training school in the art of gallant living. Yet it may have been that wholesome and completely happy childhood that helped me most of all to weather a protracted period of misfortunes, of which the terrifying lump was only the beginning.

I looked a dozen times a day at the little spot of alien flesh. I went to the prom, but the heaviness of my heart sank even to my feet. Seven days later I was back in the doctor's office.

"You and I have a date at the operating room at 2 o'clock," he told me. I listened, only half hearing, while he phoned the hospital and gave his instructions.

"He thinks it's a cancer," I kept saying to myself. "If it weren't, he wouldn't rush me to the hospital like this." Those thoughts kept churning around in my brain; the back of my neck ached with tension, and I felt ill in every fiber of my being. Sobs kept rising in my throat, and they had to be stuffed unmercifully back into that part of me that sobs arise from, for I was walking down College Avenue toward the hospital, and there were professors to bow to and friends to wave a gay hand at.

"Be a good sport," one part of me said. "Remember how impressed you were on reading that the French aristocrats danced gaily every night in the Bastille. That took courage." Then another little inner voice would pipe up, "But you have a cancer, and there's no laughing that down."

At a quarter of 2 I climbed the hospital steps. Every one was sweet to me. I put on one of their silly nightgowns, and they loaned me a bathrobe, and at 2 o'clock I kept my date in the shining white room.

They gave me a local anesthetic. The operation was all over in twenty minutes. The distinguished father looked over his son's shoulder while the latter worked.

"Did he hurt you, my child?" the elder surgeon asked when it was almost over. "If he did, I'll take him across my knee the way I used to do!" They joked and tried valiantly to get a smile out of me.

Before they wheeled me out of the operating room, the father said to me: "If you hadn't come to us so early, you might have gone under ether, had both breasts removed and stayed in the hospital far longer than three or four hours. I wish there were more like you."

I remained in the hospital until 6 o'clock and then walked back to the sorority house, ate supper with the girls and kept a movie date that night! The resilience of youth! I was 20 then, remember.

A few days went by, and I began to breathe easily again. Then the doctor phoned and wanted to see me. It was important, he said. The old terror surged up again within me. I went as soon as I could give myself a pep talk and get in condition to face it, whatever it was. I didn't like the look on his face when I saw him. His father was there, too, and I didn't like the look on *his* face either.

As gently as they could, they told me that the report from the laboratory said "sarcoma." Since I didn't faint then, I know I never shall faint as long as I live. Sarcoma was not a new word to me. A neighbor of ours at home had died of it.

They told me I must get in touch with my family right away. There would have to be another operation. To make sure that it was completely removed, both breasts might have to be removed, and there was no time to spare.

Maybe my misery was too much for him. At any rate the young doctor jumped suddenly to his feet. He was aglow with inspiration. "Dad," he shouted, "I'm going to send a slide of this tumor to Dr. Smith within an hour. We'll do whatever he says. This report doesn't convince me. I want an expert's opinion. Dr. Smith," he turned to me, "is the greatest cancer specialist in this country and, I think, in the world. I studied under him last summer. You keep that chin up yet awhile!"

I sat through classes and wrote tests mechanically. My old history professor had such kind eyes. Surely he might understand why I was no longer interested in the Roundheads and the Cavaliers. What was the use of filling an overtired brain with any more history? Six months at the most . . . But I couldn't tell him. I couldn't tell any one. For the first, and I hope the last, time in my life I knew despair.

The things I was going to lose . . . faces of people I adored . . . Mother's garden where I too loved to dig and plant . . . the view of the mountains from the windows in my room at home . . . the sun . . . the rain . . . the newspaper job that had been promised to me . . . my family . . . the boy who was becoming every day dearer than any other I had ever known . . . the little girls of my own I might have had some day.

It wasn't because I dreaded the everlasting coldness of lying in a box. I believe in Heaven. My very name is Faith. Through those days I prayed harder than I ever had before and came closer to God.

But I loved this life so much and wanted more of it. No wonder a maker of sonnets cries out, "World, world, I cannot get thee close enough!" I kept thinking how true it was that "Fifty springs leave little room, to see the cherry trees in bloom." Nor eighty wouldn't be enough for smelling wet pine!

And I had taken it all for granted! While the steady beat of the clock continues we pay no attention to it, but the minute the

(Continued on page 191)

THE CHOICE of a MARRIAGE MATE

(Continued from page 124)

dren was honest bread. A girl giggled when her "date" siphoned gasoline from another car and spent the money saved on tickets for a show, but she didn't giggle when he robbed a bank and was sent up for ten years, leaving her with three small children to care for.

Closely related to morals are manners. One grows weary of an insolent husband after a few years. A pert young girl may be able to get away with impudence and impertinence; but after a man is married and is bringing "the boss" to dine, he will prefer a wife who knows how to behave. It must be comforting to the wife to know that her husband is a gentleman when he is out of her sight and to a husband to know that while he is at work his wife is behaving like a lady. The manners and morals of the children will be a great source of consolation or grief as the case may be, and yet the manners and morals of the children are usually the same, or much the same, as those of the parents. Manners and morals should be satisfactory before marriage is consummated. Marrying a man to reform him is definitely the saddest occupation of womankind. If he won't behave as a fiancé, he certainly won't as a husband. And the same statement applies, unfortunately, for wives.

Fourth: *Consider education and culture carefully.* It is a great pity when the education and culture of two mates is so diverse that they cannot enjoy the same things. Not every one can have a college education, nor is it necessary that every one should, but it is a good thing when the man and his wife have such an understanding of each other's interests that they can enjoy the same things. Some college people, mistakenly, have the idea that all who do not have a university education and a fraternity pin are hopeless boors. Obviously it would be a mistake for such a man to remain true to the pledge to the mountain daisy who stayed behind in the old home town. True enough she may be worth a dozen of him or of a college girl, but just the same it is going to be a sad mistake for them to marry. He will probably be ashamed of her and treat her as if she were not good enough for him. She will do better to marry some honest farmer who will appreciate her virtue and her industry, while the "rah-rah boy" will do better to marry some one with more swank though possibly with less native wit.

There have been instances of great men married to little gray mice who never were seen by the world, but I strongly suspect that those days are gone forever. The place of a modern woman is so prominent that it is hard to believe a man can reach the heights unless he has a wife who can climb with him and hold an honored place by his side. No man can do his best work without the intelligent appreciation of the one he loves most. Likewise in these days when a woman may attain high success she needs a husband who is also a man honored in his own right. It is no fun for an insignificant man to be known simply as the husband of Mrs. So-and-so. However, in case he is a Mr. Somebody himself he will be proud and happy to have so distinguished a wife.

If one of the pair loves music, it will be better if the other does or learns to do so. Then they can play or sing together, which is surely better than for one to complain about the noise the other is making. If one enjoys books, cards, dancing, golf or what-not, it will be much better if the other either enjoys the same, can learn to do so or at least can tolerate them. It is hard to see how a marriage can really succeed if one mate holds in contempt the culture or lack of culture, the likes or the dislikes of the other.

Fifth: *Religion and social group should be similar.* I have no fault to find with any one's religion, but there is frequently a great deal wrong with marriages across the line. Doubtless there are happy marriages across this line, but I have seen few if any of them. It is a big hazard and should be treated respectfully.

It is a great mistake as a rule to marry some one from across the railroad tracks. If your mate belongs to a social group which is held in contempt by your family and friends, there is a red light ahead. Maybe they are snobs, but you won't like being ostracized—you and your children—by people who have been your friends and relatives all your life. And if you yourself come from the wrong side of the tracks, you are not going to like being treated as a "trashy" relation.

Sixth: *Be sure that matters pertaining to finance are clearly understood.* There is only one thing more sordid than a deliberate marriage for money, and that is a marriage without some sort of understanding about the ability to pay the legitimate bills. It is possible for wealthy persons to marry either poor or wealthy persons and be happy, and it is possible for poor persons to marry poor or wealthy persons and be happy. Surely the possession or lack of possession of wealth is in itself insufficient grounds for determining whom one shall marry, but certainly there must be an honest understanding of the state of the finances before there can be hope of future happiness. I have in mind a poor family who skimped to clothe in luxurious fashion a beautiful daughter so that she could catch a rich husband. She did catch a rich fellow, and the family descended on him like a flock of hungry vultures. He had the money to support them all, but he didn't have the heart to stick to a marriage into which he had been tricked. Another young fellow four-flushed himself into the affections of a girl. He had a beautiful car and pretended to be wealthy. After the wedding it was found that he had nothing to carry out the roseate plans which had been made. The wife was angry, as she had a right to be, and left him. He said she had married him for his supposed money. She said that she left him because he had tricked her and lied to her.

It is likely that many of the happiest couples are those who live in a simple workingman's cottage. It is true also that divorce and unhappiness do not always thrive in wealthy surroundings, as many suppose. Money is easily lost or gained; many a poor boy has become wealthy, and many a rich one has had to go to work. Money is what we live *by;* it should never be what we live—or love—*for.* Money is a good thing to have, if one gets and uses it honestly; but, except in such amounts as are absolutely necessary for the requirements of life and a few of the luxuries, it is not indispensable to happiness in marriage.

The couple contemplating marriage should honestly check over their various financial resources and liabilities. They should investigate the expenses of married life and make a tentative budget. Then if every one is satisfied and absolutely sure he is content, they may go ahead.

Seventh: *Be a worker, and marry a worker.* I certainly would not want to marry a woman who does not know how to cook, sew, keep house and take care of children—or is not willing and anxious to learn. Ordinarily I should be suspicious of one who said she was eager to learn such things but hadn't as yet done so. If I were a woman, I certainly should not want

to marry a man who hadn't already shown that he was willing and able to work and make a living for a family. Even if a man is so wealthy that he never anticipates having to earn a living, I should still insist that he have a profession or such training as will make it possible for him to earn in case something should happen to the family fortune —as has so often happened in recent years. Even if the wife is to have a flock of maids, cooks and nurses about her, she will still need to know how to do the things previously mentioned, if she is to manage such a household properly.

How could one maintain self respect if conscious of the pertinent fact that one has no useful purpose in a world that is writhing in agony with every sort of problem that needs to be solved? How could I retain respect for my wife, if I knew she was a useless person? How could she retain respect for me, if she knew that I was a loafer —whether in an exclusive club or in a dingy hangout? Admiration, love and mutual respect are indispensable to happy married life. They are precious possessions which must be fed daily, if they are to thrive and grow. They are nourished by appreciation of real worth; they are watered by the secure knowledge that in a time of need the one on whom one leans has what it takes to do the thing that needs so badly at that time to be done.

After all that has been said as to what an education is, the fact remains that the educated person is simply the one who knows what to do when it needs to be done and is willing and able to do it. I shouldn't want to be married to a college diploma or to a piece of beautiful skin stretched in the most delightful manner over a mass of idle muscle and bone. If I were a woman, I should be much more interested in the man that made the bank roll. After all, it is only three generations from shirt sleeves to shirt sleeves. One should give a thought to the possibility that one may be marrying into the second or third generation.

Eighth: *Language, age, race and the like may be important.* It will be better if both mates speak the same language. Rarely is it possible for one to learn to speak a language other than one's mother tongue with all the fine gradations of meaning that mean so much in family life. If only one of the pair learns the other's language well, as is usually the case, it means that the other can hardly write to or converse with the relatives who speak a different tongue. The children of such a family usually speak only the one language and are therefore unable to get close to their grandparents, uncles and aunts who speak the other. A common language is not an absolute necessity to a happy marriage but it certainly is a tremendously valuable convenience and aid.

The one who marries across well marked racial lines is assuming a tremendous responsibility. When there are sharp racial lines, one may be sure that there will be antagonism and conflict across those lines. It is bad enough when such conflict is in one community; it is disastrous when it is within a family, or worse yet within an individual the two elements of whose nature are constantly jangling out of tune. Obviously there is little objection of this sort, if the contracting parties are merely of different nationality, both being white, black, brown or yellow.

Ordinarily it is much better for the two contracting parties to be of practically the same age—at least physically and psychologically. When the husband is much younger there is often real trouble. When the wife is years and decades younger there is likewise serious danger. It is hardly reasonable to suppose that June and November will live in harmony, as many an elderly and ambitious man has learned to his sorrow.

Ninth: *Kindred temperaments are very convenient in marriage.* It may be possible for a flame and an icicle to get along together with advantage to both, but it surely takes a lot of management to keep each from destroying the other. Rarely can the one type change completely into the other type without a complete destruction of native personality, which is seldom advisable. If one is naturally of a passionate nature, one will do well to beware of a marriage to an icicle or a clod. Likewise if one is by nature cold, shy or reserved, one will probably be greatly embarrassed at times to be dragged after the "life of the party," a vivacious rowdy who wants to paint the town red rather than settle down to a prosaic work-a-day existence. Parents often try to balance a "devil-may-care" son or daughter against a good steady girl or boy, and one can hardly blame them. Yet it seems a shame to make the good boy or girl the sacrificial goat. Likewise there are times when it is unwise to hitch Pegasus to the plow.

If one partner loves and desires children, it will be well to make sure before the marriage has been consummated that the other one also does. If one has the foot that can only be satisfied when it is wandering over far trails, it will be well to make sure that the other has a foot that can happily follow the same trail. Marriage is companionship, or it isn't happy marriage. Companions must be compatible. It is well not to marry a given person until you have known him long enough to be sure that you are of the same general type of temperament. Hasty weddings after "love at first sight," "gin weddings" and elopements are highly romantic at the time but are likely to terminate in a cold and sickening thud that ends all possibility of subsequent romance.

Tenth: *The mate must be lovely and lovable.* Obviously it is possible to love only those who are lovely, and it is necessary that one have the ability to love before one can do so. Beauty of skin and figure are commonly regarded as essential to genuine love, and indeed they are so to some extent. Few of us could love a dirty hag or a coarse bestial man. Every natural girl or woman will try to be as attractive as nature, soap and water, tidiness, care and a reasonable use of cosmetics will permit. Every boy or man will use corresponding means to make himself acceptable to his feminine friends. If there are persons who will not make such an effort, they had best be checked off the list of marriageable possibilities. On the other hand, those persons who are far above the average in looks are likely to be regarded as somewhat of a risk in marriage. Men prefer sweetness to unusual beauty. Women prefer steady and reliable husbands to matinee idols. The commandment "Thou shalt not covet" is not closely observed in this world, and so it is just as well sometimes to have a wife or husband on whom one's friends can look without desire. Besides, beauty can be lost —or acquired.

It would be foolish to marry any one who is incapable of love. How does a young person treat his parents? How does he treat children, dogs or servants? Is he capable of great, self sacrificing love? If so, love may be expected to cover a multitude of sins—or defects. Does he really love, or is he simply all stirred up by the fact that one of the opposite sex is near? It is well to make sure about what appears to be so little a thing. Is he in love with you, or in love with love and sex in its narrowest phase? It is important not to mistake passion for affection.

Not every one is going to be successful in finding a mate who can meet all the high requirements set forth in the foregoing rather arbitrary and didactic paragraphs. One can hardly expect perfection here on earth, and I should not wait, if I were a young person, until I could find such a one perfect in every particular. Genuine

(Continued on page 181)

★ *YOUR ANSWER TO THE QUESTION THAT MILLIONS HAVE ASKED* ★

"How Can I Help Fight Infantile Paralysis?"

SEND ONE DOLLAR OR MORE TO THE ADDRESS BELOW

Over every home in America a grim shadow is cast... the shadow of that dread disease that twists and cripples the bodies of children. Every mother and father is asking the question, "How can I help fight Infantile Paralysis? . . . how can I protect and preserve my home from this deadly ravager?"

President Roosevelt answered that question by founding the new national Foundation for Infantile Paralysis and saying:

"The purpose of the new Foundation is to lead, direct and unify the fight . . . to ensure that every research agency is adequately financed . . . to eliminate improper care and needless after effect... to disseminate knowledge to the practicing physician who is the front line fighter of the sickness."

How will you answer this great nation-wide appeal? What will be your response to countless thousands of children who cry out: "Please help protect me from Infantile Paralysis?" Certainly your reply will be swift—sure.

"Protect your children against infantile paralysis"

THEY know you will send in one dollar... five... ten... a hundred... what ever you can afford... to help found the great new national Foundation for Infantile Paralysis. Please "do your bit."

Write your check or money order with your heart as well as your pen. Send in what you can today.

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The Next Great Plague to Go

TODAY syphilis is causing more misery of mind and body than any other preventable disease. Five hundred thousand new cases are reported under treatment by physicians each year. Hundreds of thousands of other cases never receive proper medical care.

Most new cases can be cured—completely cured—*provided* correct treatment is started immediately. Why then does syphilis wreck so many lives? One big reason is that in its early stages the disease creates little personal discomfort. In addition, charlatans and quacks often can deceive syphilitic patients. Early symptoms—usually a sore, a rash or a persistent feeling of not being well—disappear no matter how unscientific or inadequate the treatment.

Many a victim, therefore, believing he has been cured by a few quack treatments or that he has never been infected, lets time slip by during those early weeks when he has the best chance to begin a real cure. Meanwhile, the disease slowly entrenches itself in one or more vital organs.

Years later, long after the initial attack has been forgotten, syphilis strikes. It may mean death from heart disease in a man of forty, at a time when he is most needed by his family. It may mean insanity, also at a relatively young age. It may mean blindness. And often death is preceded by a long period of partial or total disability.

Syphilis numbers its innocent victims in the thousands. In its early stages, syphilis is highly infectious. It may be contracted unknowingly by a kiss or by direct contact with articles freshly contaminated.

Fortunately, nobody needs to be in doubt as to whether he or she is infected by the syphilis germ. With the aid of blood tests and microscopic examinations, the skilled physician can determine whether or not the disease is present. This service is also given by public health centers and clinics in an increasing number of communities. Their locations will be readily supplied by the health department or the county medical society.

* * * * *

There is no quick or short-cut method of curing syphilis. The only way to kill all the germs is through a systematic course of regular weekly treatments for a period of many months. Begun in the early stages of the disease, the treatment covers a shorter period and insures the cure of about 85 per cent of all cases. Even sufferers in the advanced stages can be given some relief.

Syphilis is a leading cause of stillbirths. Most tragic of its victims are the 60,000 American babies born with preventable syphilis each year, many of them born blind. Early and competent prenatal care of syphilitic mothers will save most of their babies from being born with infection. It will also prevent many miscarriages and stillbirths.

A postcard will bring the Metropolitan booklet "The Great Imitator" which gives additional information about this disease. For free copy address Booklet Department 238-Z.

* * * * *

The American Social Hygiene Association, through its National Anti-Syphilis Committee of over 200 prominent people, is sponsoring the second *National Social Hygiene Day, February 2nd, 1938.* On this day, citizen groups and physicians all over the country will meet with officials to plan the next steps to take in stamping out syphilis. This Association, 50 West 50th Street, New York, N. Y., will be glad to send literature and full particulars regarding the meetings.

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YOUR AGE and YOUR HEART

(Continued from page 173)

boon companions. The obesity factor is not entirely preventable but in a sense is controllable. One man with a Gargantuan appetite loves food so much that every time he sees a cafeteria he goes in and gets something to eat. That fellow will develop a large waist-line or a pot-belly before long. It is perhaps in many cases not the type of food but the quantity that is at fault. For that reason, dieting is a help. Most of us eat too much, and a person on a diet almost automatically limits the quantity of food. Keep your food simple. Watch a little child; if left alone he will not ask for condiments. Imitate the child, and eat simply. As a fat man with high blood pressure ruefully remarked, "Overcome your food, and your food will overcome you." He had recently had what he called an "attack of high blood pressure." If high blood pressure were only an "attack," mankind would be fortunate indeed, but it is a symptom, the vanguard of an invasion that is hard for science to rout.

As for our waste-lines, the care of the intestinal tract is certainly part of the prevention of heart disease. Apropos of this, there is the story of an old lady who, though she had no gold, gave her son some sage advice when he was starting out in the world: "Fear God, and keep your bowels open!"

Early deterioration is also kept at bay by keeping relatively fit. Here again is another indirect method of preventing arteriosclerotic heart disease. An advertisement of a health institute recently noted is worth thinking about: "Dead at 30—buried at 60." Many of us in college are fairly good athletes; but as we get into our thirties and forties, we are inclined to ride instead of walk. Of course one cannot prescribe athletics. Each person has to select what he feels will keep him fit and in the best physical condition. Whether this may be regular setting-up classes or some game, such as fencing, squash or even billiards, makes little difference. Every one should have a regularly planned exercise program to keep himself fit.

In addition to taking heed of your exercise there are other points in hygiene which can help prevent heart disease. Consider your personal habits. Do you drink too much coffee? Alcohol? Do you smoke too much?

Excesses of any kind are harmful. Alcohol too enthusiastically

imbibed has by-effects. These are harmful. Alcohol stimulates the appetites. It leads to excessive food intake, often precipitating a sudden heart attack. Alcohol also taken as a goad or a whip to activity is bound to lead to functional breakdown.

Almost the same idea applies to tobacco. If a person is sensitive to tobacco he soon gives it up because it is disagreeable, and he knows it. It is an individual matter. It is hard to prove at this time that tobacco has a deteriorating effect on the blood vessels and heart.

In these matters one may safely say that good digestion is important in the prevention of heart disease, and if alcohol, tea, coffee or tobacco disturb that function, cast them out.

The next question that comes to mind about prevention of heart disease in the average person's mind is, "What are the symptoms that I should watch for that may tell me that I am headed toward a cardiac breakdown?"

These symptoms are not complicated or hard to understand. For example there is a certain point in life when "the old gray mare ain't what she used to be." Perhaps accustomed effort at which nature had never balked before is now carried out with ill disguised difficulty. Or a person carrying out his daily quota suddenly finds himself shorter of breath than he used to be at the top of the stairs, or he may have a sense of pressure in his chest or even actual pain. This may be nature's warning red light that he is a candidate for a degenerative breakdown. It is the moment to pause and take stock. Now is the time to realize that he should do something to prevent the onset of symptoms that may make him eventually a cardiac cripple. One heartening thought that is not always given proper emphasis is that *adjustment can take place to even the most severe type of heart disease!*

In a recent discussion of the increased span of life and the inevitable development of heart disease by many people, a young man said laughingly, "But why should I have heart disease at all? I don't want to have that disease. I'd be finished!" Young as he was, he was imbued with the old-fashioned concept that to have heart disease was to hear the death knell—indeed that death was just around the corner. Today through the various methods of prevention, the studies of nutrition, genetics, periodic health examination and psychotherapy, perhaps we shall reach the point where death will,

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at least often, seem to take a holiday. Be sensible so far as your heart goes, and tincture your optimism with safety. Think of the old hymn, ". . . change and decay in all around I see,"—so why should man escape? As you approach middle age, perhaps ambition should be banished to a comfortable background, or let it be your occasional "Jack-in-the-box" for escape from the boredom of mediocrity and the middle of the road. Try with heart disease to be content with "a quiet home, vines of your own planting, a few books and a few friends."

In the next generation, humanity will come to realize that, thanks to science, many are bound to live longer and to have some form of heart disease. It will be wisdom to learn to live in a limited way. When searching for longevity we would do well to remember Pandora and her box of treasures. When she opened her box with her key, she found that it was full of winged blessings, and lucky was she that Hope was the single one that did not fly away. If we, like Pandora, are lucky enough some day to find the key to longevity in prevention of heart disease, let us be sure to retain not only hope but versatility and ingenuity of mind to make our years full of interest, even to the end of our own decade.

"EYE HAZARDS IN INDUSTRIAL OCCUPATIONS" IS REDUCED IN PRICE

A special reduction in price to secure wider distribution of the book "Eye Hazards in Industrial Occupations" by Louis Resnick and Lewis H. Carris is announced by the National Society for the Prevention of Blindness.

It is now offered at 50 cents a copy as long as the supply lasts; it formerly sold for $1.50. "Eye Hazards in Industrial Occupations" is a handbook for safety engineers, safety inspectors, safety committeemen, industrial physicians and nurses, for those responsible for industrial operations, whether owners, managers or members of the operating staff. Social agency workers will find use for it, as will government officials, trade association executives and many others who share the responsibilities and opportunities for conserving the life, health and sight of the millions of men, women and children employed in industry.

The volume contains 247 pages and includes 59 illustrations dealing with the safeguarding of eyesight in factories, mines, shops and offices. The National Society for the Prevention of Blindness at 50 West Fiftieth St., New York City, is in charge of the distribution.

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THE CHOICE OF A MARRIAGE MATE

(Continued from page 176)

love can do much to change one or both—much better if both. These precepts are merely the general guideposts—the stars by which one is led to one's mate. They are true stars as most thinking persons will agree. They are set in their places to help young people to make wisely the most important decision which they will ever need to make, but they do not, of course, cover every single little point.

Surely every young person wishes for a happy home. But happy homes do not just happen. They are made—painstakingly and laboriously made—by years of constant endeavor and earnest effort. They are worth the cost. The first step in the acquisition of such a thing is that the young man or woman shall make himself or herself worthy of the biggest job in the world; namely, the making of the home and the bearing and rearing of children. Having made themselves worthy they are then entitled to begin the most delightful preoccupation known to man or woman—that of choosing a mate. Having found such a one, the possibilities for happiness or unhappiness are unlimited, but the higher awards as a rule go to those who work at the job and are most worthy to win.

Probably the ultimate tragedy of life comes to him who finds that he has lavished his love, shared his bread and mingled his blood with one who was utterly unworthy. He has cast his pearls before swine and has seen them trodden underfoot.

KNOWLEDGE OF CANCER HAS INCREASED

Knowledge of cancer has increased a great deal. Many millions of dollars and the energies of hundreds of experts are devoted to further increasing this knowledge. As yet, nobody has been able to prove conclusively just what substances, circumstance or condition cause cancer. But the advances which have been made in diagnosis and treatment are well worth the effort expended.

Good milk is produced as well as milk of questionable quality; they look alike. Investigate the source of your supply.—*Indiana Division of Public Health.*

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● Scientific research has exploded and outmoded many ideas about eyes and seeing. One very common and mistaken notion is the belief that our eyes can tell us whether light is adequate for a given task. Our eyes are no more able to measure light than our palates are capable of measuring the calories in food. One footcandle might enable you to make out the words on a page, while 10 to 50 footcandles might actually be needed for effortless seeing! That is why "measured lighting" is the basis of modern light conditioning.

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MODERN MEDICAL CHARLATANS: II (Continued from page 172)

He conducted extensive radio campaigns in which he promised free motor licenses, free textbooks and anything else that the public wanted. In fact, he claimed that Kansas being the driest state in the Union, he would build a lake in every county in Kansas so that the water being evaporated from the lakes would then be reprecipitated on Kansas, making it blossom like the land of Canaan. He filed late in his first candidacy for governor, so that it was necessary to insert his name in writing on the ballots. The election clerks were ordered to throw away the ballots on which his name was misspelled or wrongly marked in the slightest degree. Nevertheless, he polled 183,000 votes, which was some 14,000 less than were polled for the winning candidate. There are some who assert that if all the ballots had been counted he would easily have been elected. This is not surprising because it is said he rereceived 20,000 votes in Oklahoma, and he was not even running in Oklahoma. He ran twice again but on each occasion was defeated.

When his radio station was removed he departed for Mexico, obtaining a license from the Mexican government. Now he broadcasts from Station XERA at Villa Acuma, Mexico, just across from Del Rio, Texas. All sorts of efforts have been made to remove him from the air but apparently without success. Right now he is not doing much in the way of goat gland transplanting. He reads the symptoms of patients and then by remote control prescribes the pill that they should use. You send him your dollar, and you get your pill. In addition, of course, he has a hospital in Del Rio where he performs some peculiar operations. The main one is the compound prostate operation for elderly gentlemen in which he merely injects a little mercurochrome into the tubes passing from the male sex glands. He has a high pressure man in his front office who makes sure that those who come to the hospital will have the money to pay in advance for the work. They are able to develop mortgages, loans and conversion of securities in order to permit the patient to pay on the nail for what he is going to get. Most of the business, however, seems to come by way of the mail, and it is time for the Post Office Department to do something in regard to the use of the United States mails by John R. Brinkley in his defrauding of the public.

Many a charlatan depends on indigent and unethical physicians to extend his work. Another of the Brinkley schemes is to sell to the patient who comes to his lair five ampules of his remedy for postoperative treatment at a cost of $100. These the patient is supposed to take home in order that the contents may be injected into him by his selected doctor. When an analysis of the selected ampules was made, it revealed that they contained a solution of approximately 1 drop of indigo in 100,000 parts of water—about what you would get by throwing a bottle of bluing into Lake Michigan.

More recently the eminent Brinkley is said to be considering the use of a weak solution of hydrochloric acid, with the idea that this would stimulate the body into some kind of a reaction.

The evidence assembled indicates that at various times, Brinkley has made as much as $55,000 a week from his various quackeries. He has been the possessor of three fine yachts. He travels abroad and returns to this country in the finest suites on the finest boats, accompanied by his family and the little boy's tutor. On the vessel going and coming neither he nor Mrs. Brinkley engage in conversation with the passengers. His name is too widely known for what he is to make him want to take the chance of what will happen when the passengers learn the names of their transatlantic acquaintance. Yet the money rolls in, which proves that the wages of sin is not always death.

Conclusions

In the survey of modern medical charlatans it becomes apparent that in every field of science they are making their mark. We find them promoting lights in the form of spectrochrome therapy in which colored lights are thrown on the abdomen of the patient, who sits on a platform, facing east by west, in order to determine what is wrong with him.

In the barber shops there are ultraviolet rays for toning the skin and for growing hair on reluctant scalps. More recently the barber shops are promoting Xervac, an alternating vacuum to encourage hirsutage adornment by improvement of the circulation in the scalp. In most cases it will not work because the people who use it have a vacuum both below and above the scalp at the same time.

The glandular quackery pervades every field of science, and all sorts of concoctions of giblets are fed to credulous believers for every purpose from reduction of weight to improvement in potency. The actual scientific uses of the glands have revealed powers undreamed of, and it is the small amount of actual knowledge that makes possible the tremendous exploitation.

The certain facts that we have about diet, if generally known and applied, would unquestionably increase life expectancy on the average of from five to seven years. Yet few persons are willing to acquire this fundamental knowledge, preferring to follow the will-o'-the-wisp of the more psychologically attractive systems promoted by the dietary charlatans.

The cancer quacks persist year after year in their mulcting of the sick and the dying, because scientific medicine has not yet found a certain cause for this condition or a specific method of cure. When this cause and cure are found, the opportunity for the quack will naturally diminish.

In this survey of leaders in charlatanism there is one group for which an exponent has not been named. That is the group of psychologic and faith healing charlatans. Of course, all of them, regardless of the methods by which they operate, depend on the will to believe for securing their followers and for the production of the testimonials which are a necessary ingredient in the promotion of quackery. The psychoanalytic quack, the mind healing quack, the autosuggestive quack and the spiritual healers regularly victimize hundreds of thousands.

If there is any moral advice that can be given for protection against the quacks, it is *"Be skeptical."*

So great have been the discoveries of modern medicine that many of them are well nigh unbelievable. That very fact should encourage reliance for judgment on those who are scientifically educated, legally licensed and trained by experience in the diagnosis and healing of disease.

[NOTE.—To promote the possibilities of protection against quacks, HYGEIA continues its work of exposing their chicanery. Future issues will bring such enlightening articles on charlatanism as "Electric and Magnetic Cure-Alls" by Dr. Arthur J. Cramp; "Dr. William Howard Hay's Dietary System" by Dr. Lewis R. Wolberg; "Testimonials—Wholesale and Retail" by Dr. Frank J. Clancy and "'Doctors' Minus M.D.'s" by S. R. Winters.]

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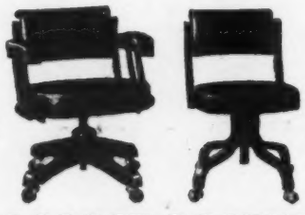

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TO AMERICA'S SCHOOLS—YOUR HEALTH

(Continued from page 168)

lasting effect and in some patients, but not in all, totally replaces insulin. The proper taking of insulin requires a correct balance between the amount of food taken by the patient, the amount of insulin taken and when it is taken, and the amount of exercise taken by the patient. This requires careful regulation by the doctor. It also demands intelligent cooperation by the patient.

Diabetic patients face the following dangers:

1. If they are careless about their diet or their insulin, they may fall into a coma, a form of unconsciousness, and die.

2. If they are not scrupulously clean, they may suffer from boils, carbuncles or gangrene, because they are exceedingly susceptible to infection by reason of their disease.

3. If they take too much insulin or too little food in relation to their insulin, they may suffer from insulin shock, a condition in which the patient has too little sugar in the blood. This is totally unnecessary if the correct directions are faithfully followed. All diabetic patients are advised to carry a few lumps of sugar in their pockets, with which to overcome insulin shock by promptly supplying sugar.

Diabetic patients must learn:

1. How much food of all classes can safely be allowed.

2. How much insulin is needed in relation to the amount of food taken, and when the insulin must be taken.

3. How much exercise to take.

4. How to test the kidney excretions for sugar.

5. How to keep scrupulously clean.

6. How to avoid infection such as colds.

7. How to cooperate at all times with the advice of the doctor, even when they feel well enough to think they do not need it.

REFERENCES FOR TEACHERS

Texts previously suggested.

A Diabetic Manual for the Mutual Use of Doctor and Patient by E. P. Joslin. Price, $2. Philadelphia: Lea & Febiger, 1934.

A Primer for Diabetic Patients by Russell M. Wilder. Price, $1.75. Philadelphia: W. B. Saunders Company, 1934.

SUGGESTED PROJECTS

Find out from the local health officer or the state board of health how many persons died of diabetes in the state last year, and what their ages were; also the same information for ten years ago and twenty years ago. The population for these years must also be known, so that the deaths can be reduced to rates per hundred thousand for purposes of comparison. Have the lives of young diabetic sufferers been saved since 1922? Has diabetes increased in spite of insulin? If so, assign one or two members of the class to interview the health officer and several practicing physicians for an explanation of why this has happened.

If diabetes is a hereditary disease, at least to some extent, what would be your reaction to a suggestion that you marry a person in whose family diabetes exists?

Have one student give a report on Sir Frederick Banting and the discovery of insulin.

To show a chemical test for sugar, ask either the chemistry teacher or a chemistry student to make up the following solution and test it for sugar as follows:

To 1 pint of water (ordinary tap water can be used) add 2 level teaspoonfuls of table sugar. Take 1 ounce of this solution, and make the qualitative test for sugar, using either Benedict's solution or Fehling's (most chemical laboratories have Fehling's solution available, and it will therefore not be necessary to prepare fresh each time). Note that there is no reaction. Ordinary table sugar is sucrose and does not give the test for sugar as seen in cases of diabetes.

Now, take 1 ounce of the sugar solution, and add 2 drops of concentrated hydrochloric acid. Boil this mixture. Allow it to cool, and make the solution neutral to litmus paper tests by adding sodium carbonate or sodium bicarbonate (baking soda). Then proceed as before, making the test for sugar, using Fehling's or Benedict's solution. Note that this time the typical brick red sugar reaction seen in diabetes appears.

It may be necessary to have a physician in your community aid you in obtaining some of these materials in case they are not available in the school laboratory.

[Note.—Hygeia will publish in this department each month similar briefs of programs to come during the succeeding month, with reading references and suggestions for things to do. Reprints of this section are available in bundles of twenty-five at 50 cents a bundle, postpaid, cash with order, for use in schools. Single copies, 5 cents. Address Order Department, American Medical Association, Chicago.

This department and the radio program are under the direction of

Dr. W. W. Bauer, Associate Editor of HYGEIA and Director of the Bureau of Health and Public Instruction, American Medical Association. A workbook entitled "Your Health" has been prepared to accompany the programs. It is published by Johnson Publishing Company, Richmond, Va.]

SAFE DRIVING EXAMINATION

The maximum score for each point is indicated in the column at the right. Give yourself whatever proportion of this perfect score you *honestly* believe you deserve. A total score of 90 or more rates you as an excellent driver; 80 to 90, good; 70 to 80, fair; under 70, poor.

1. Do you always drive at a reasonable speed, giving due consideration to traffic, road conditions, weather, etc? ——— *Score 10*

2. Do you make sure that your car is at all times in good order, particularly as regards brakes, steering gear, lights, windshield wiper and tires? ——— *Score 10*

3. Do you refrain from passing other vehicles on the brow of hills or on curves? ——— *Score 8*

4. Do you make it the rule never to cut in and out of traffic? ——— *Score 8*

5. Do you drive only when you are in full possession of your faculties? ——— *Score 7*

6. Do you give the right of way to pedestrians, particularly children and the aged or infirm? ——— *Score 7*

7. Do you at no time let your attention wander, either through conversation or sightseeing? ——— *Score 6*

8. Do you slow down when handicapped by approaching headlights? ——— *Score 5*

9. Do you always give proper and adequate hand signals before turning, slowing down or stopping? ——— *Score 5*

10. Do you strictly observe all traffic lights, stop signs and warning signals? ——— *Score 5*

11. Do you approach intersecsections, particularly blind intersections, with your car under complete control? ——— *Score 4*

12. Do you get into the left lane before turning left and into the right lane before turning right? ——— *Score 4*

13. Do you pull into traffic only after looking and signaling? ——— *Score 3*

14. Do you make way when a car wishes to pass, instead of speeding up? ——— *Score 3*

"MY babies never have rashes that strong soaps often cause," says the mother of Allen, Ellen and Edwin, "because their things are always washed in Lux. Sweaters, blankets, stockings, flannels—diapers, too, are soft as new."

● Careful mothers everywhere insist on Lux! It has no harmful alkali to irritate a baby's tender skin. Won't make woolens rough and scratchy.

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The American Medical Association has a large amount of authentic health material in the form of pamphlets and books. They cover a wide range of subjects. Complete catalogue listing this material with prices will be sent on request.

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Has your child heart trouble, asthma, diabetes, nephritis?

He may lead a normal life, grow strong and learn in the sunshine at

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SANTA BARBARA, CALIFORNIA
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Tutoring and vocational schools for boys and girls with educational or emotional difficulties. Helena Devereux Fentress, Dir., or John M. Barclay, Reg., Box 90, Berwyn, Pa.
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Schools and Camps for Exceptional Children (Continued)

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Beverly Farm, Inc. Home and school for nervous and backward children and adults. Successful, social and educational adjustments. Occupational therapy. Dept. for birth injury cases. Healthfully situated on 220-acre tract, 1 hr. from St. Louis. 7 well-equipped buildings, gymnasium. 40th year. Catalog. Groves Blake Smith, M.D., Supt., Box H, Godfrey, Ill.

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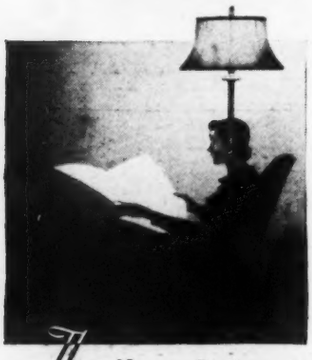

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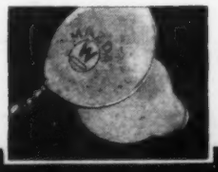

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15. Do you cross grade crossings cautiously? ——— *Score 3*

16. Do you keep at an adequate stopping distance from the car ahead? ——— *Score 3*

17. Do you sometimes let the other fellow have your "right of way" in the interest of safety? ——— *Score 3*

18. Is your rear vision mirror O.K.? ——— *Score 2*

19. Do you park your car so as not to interfere with traffic? ——— *Score 2*

20. Do you lock your car when parked? ——— *Score 2*

Total perfect score, 100; your score ———.

—*Adapted by National Education Association from a safety leaflet of the Oklahoma State Highway Commission.*

NEW HOME FOR DRUG ADDICTS

At a great federal narcotic farm at Lexington, Ky., 1,048 drug addicts have been cured. Here under government supervision they tend farm animals, grow vegetables, make the clothes they will wear when they go home, enjoy a gymnasium, bowling alley, a farm band and library and attend church services if they wish. The methods by which the cures have been effected are revealed in a recent issue of *Time* magazine which presents the successful Lexington farm experiment and reports plans for a similar institution at Forth Worth, Tex., to be undertaken at a cost of $4,000,000.

Lexington is primarily for federal prisoners who are addicts. Fort Worth is to be primarily for voluntary patients. Volunteers will be obliged to present certificates from their private doctors that they want to take the cures. They must sign an agreement that they will remain in the hospital until discharged. If they can afford it, they must pay $1 a day for board, room and doctoring.

Prospective mothers are like athletes in training for an important event. They should live according to the rules to assure a well baby and a healthy mother. Approved diet contains nourishment for the mother and materials for building the body of the baby. Starches, fats, vitamins and minerals, with plenty of milk, leafy vegetables, whole wheat bread and restricted amounts of meat are recommendations often made. Women who are to be properly prepared for motherhood should have the care and advice of a physician throughout the period and for several weeks after the baby is born.

BABY COMING?

See your doctor regularly. Ask him about breast-shaped Hygeia Nipples and wide mouth Hygeia Bottles. New valve inside nipple helps prevent collapse. Tab keeps nipple germ-free. Smooth, rounded inner surface and wide mouth make cleaning bottle easy.

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This mimeographed manual is now being used as a guide for teachers and health workers who are interested in building a school health program around life needs and experiences.
Many concrete examples of steps taken by teachers and suggestions for health officers, nurses, and health education leaders are included.
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To America's Schools

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Workbook and Guide by Dr. W. W. Bauer and Dr. P. A. Teschner to accompany and give permanency to Your Health, new radio program of American Medical Association, broadcast each Wednesday at 2:00-2:30 P. M., EST, over NBC Red Network.

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—about the "Ovulation Time Table" and "Medical Arts Slide Rule" which is a simple guide for natural birth control without the aid of any chemical or mechanical device or appliance. Medical Arts Slide Rule sent prepaid with instructions upon receipt of $1.00. Address
MEDICAL ARTS, 319—16th St., Denver, Colo.

ACCEPTED FOODS

This department is a useful guide in the selection of foods of quality, advertised with truthful claims. All products in this section as well as any others advertised elsewhere in HYGEIA stand accepted by the Council on Foods of the American Medical Association, and are entitled to bear its "Seal of Acceptance." The foods listed here are but a portion of those accepted by the Council. If you desire information regarding any other food product, you are invited to write to HYGEIA.

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Durkee's

Purely American Vegetable Margarine, an "All-American" product, is nutritious, satisfying, an ideal food for cooking, baking, frying and general table use.

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High retention of nutritional values because made by patented process. The Sun-Rayed Co., Frankfort, Indiana.
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Dated for Freshness
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10 Years' Work for Your Baby

Ten years of research and experience have brought Gerber's Strained Foods to a high standard of excellence, offering the quality, purity and nutritive values that your baby deserves. 11 varieties.

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DO YOU LIKE GOOD CREAM CHEESE?
HAVE YOUR DEALER SHOW YOU THE NAME
Breakstone's
WHEN HE CUTS YOUR ORDER

Do You Know—

1. What happens when a Negro is photographed with infra-red sensitive film? *See page 109.*
2. How to give first aid when a person has had a branch, ski tip or ski pole stuck into him? *See page 145.*
3. What are the four fundamentals of dental hygiene? *See page 136.*
4. What is trichinosis and how to keep from becoming infected with it? *See page 120.*
5. Why underwater exercise is easier for arthritic persons than any other kind of exercise? *See page 106.*
6. What is the "fuel" for muscular work, and where is it stored? *See page 141.*
7. What six factors determine the correct illumination for industrial workers? *See page 125.*
8. How to pick your marriage partner? *See page 122.*
9. What is the ratio of snorers to those who sleep quietly, and what causes snoring? *See page 148.*
10. If there is any particular period of a person's life in which he is more susceptible than at any other to rheumatic heart disease? *See page 116.*
11. Does the abdominal wall normally move in or out during respiration? *See page 169.*
12. What principle fundamental to psychology did Ivan Pavlov discover and in what medium did he discover it? *See page 150.*
13. What food has the highest calcium value, and what is its function in the body? *See page 163.*
14. What are the early signs of cancer? *See page 168.*
15. What is insulin, and where and by whom was it discovered? *See page 129.*

LIKE A SPRING RIGHT AT YOUR TABLE!
CLOVERDALE MINERAL WATER
A pure, wholesome and invigorating water makes you want to "drink lots of water."
ECONOMICAL TOO . . . Airless carbonation keeps CLOVERDALE lively long after it has been poured, and preserves the sparkle even when re-capped and put away. Comes to you in bottles 1/3 larger than other leading brands. Used in making CLOVERDALE GINGER ALE and SARSAPARILLA.
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Dr. Phillips
CITRUS FRUIT JUICES
Recommended for Children
as a Source of Vitamins A, B and C

Dr. Phillips Orange and Grapefruit Juices and Grapefruit Hearts are uniformly rich in vitamin C and always full of flavor. Tree-ripened, they are canned fresh from the grove under the most modern scientific and sanitary conditions. Easy to serve at any time, anywhere. Get several cans today.

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Shop through the advertising pages of HYGEIA. A little head work may save a lot of footwork.

COLONIAL FLOUR
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Strained or Sieved Foods Prepared at Home
WITH A
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PEAS BEANS CARROTS SPINACH TOMATOES FRUITS
A few turns of the handle and you have finely pulped vegetables or fruits for infant feeding or smooth diets of adults. Widely endorsed by doctors and hospitals. Fills a daily need in every kitchen. Mashes, rices, and strains all cooked vegetables and fruits.
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Make youngsters eat big breakfasts—start them off with a heaping bowl of Wheaties, the new whole wheat cereal. Nutritious and delicious. At your grocer. See 3rd Cover.

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made from properly ripened grapes. Contains no added sugar, water or other substance whatsoever.
Free from the excess acid of unripened fruit.
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BOVRIL... SEE PAGE 191
BEVERAGE
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Easy to make — Easy to take

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H. J. HEINZ CO., Pittsburgh, Pa.

SCHOOL and HEALTH

(Continued from page 166)

ALL IN THE DAY'S WORK

MARY B. RAPPAPORT
Health Teaching Supervisor
Onondaga Health Association
SYRACUSE, N. Y.

Helping children to meet their emotional problems is one of the most important functions of good teaching. Here is a good story picked up by the supervisor in her adventures among the schools.

SARAH wanted the doll so much. She had never had one of her own. She enjoyed going to the house which had been built in the sand table at school and playing with one in particular.

The doll's eyes were blue, and her hair was curly. Her dress was so lovely and soft. Was there ever a doll so beautiful?

This would be the last day she would have with Samanthy Ann. She heard the name singing in her ears, "Samanthy Ann! Samanthy Ann!"

When the other little girls finally went to the table to take their dollies home she trudged along. Unseen, she snatched her favorite and put it under her cape.

"Miss Alice, my dolly's gone! Oh! Somebody took Samanthy Ann."

She heard Ann crying, but she clutched the doll tightly. She just couldn't give her up now.

"Children, let's help Ann find her doll. We will find it, Ann, in just a minute."

But it wasn't found in a minute. The sobs increased. The teacher noticed how tense Sarah was.

"Sarah, will you help me hunt for Ann's doll? Just think how badly you would feel if Samanthy Ann belonged to you and some one took her away."

Sarah ran to the table. The sand flew, and there appeared the lost doll.

"You certainly have bright eyes," said Miss Alice, giving Sarah a big hug. That helped ever so much.

A few days later, a dolly was on Sarah's bed when she awoke. The doll's hair was curly, and her eyes were blue.

"Oh! What a beautiful doll! I have a dolly now. She belongs to me," sang Sarah. "I'm going to call her Samanthy Ann."

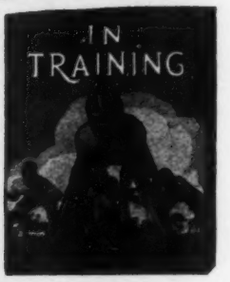
I know I have hurt nobody by rest, but I am quite sure I often have by allowing them to exercise.

—*Trudeau.*

SEX EDUCATION
Booklets by
THURMAN B. RICE, M.D.
Modern without sacrificing fundamentals. Frank, but not sensational. Illustrated.

For Boys and Girls of Ten
How life comes from life—How flowers are born—Male and female functions in fish, frogs, turtles, birds, calves, colts, kittens and human beings—Simple facts about sex hygiene. 36 pages

For Boys of High School Age
How sex influences every minute of life—Clean sports—The fun of hobbies—The miracle of Life—Human mating—Purposes, physiology and hygiene of sex—How marriage protects the race. 48 pages



For Girls of High School Age
Motherhood, the great career—How reproductive organs function—Menstruation, its physiology and hygiene—Athletics for girls—True feminine attractiveness—Going out with boys—Marriage. 38 pages

For Both Sexes of College Age
Training for happy home life—Sex feeling of male versus female—Control: a mutual responsibility—Premarital understandings—Planning for parenthood—Ideal honeymoon—Two purposes of sex. 44 pages

For Persons of College Age or Older
Prevalence of venereal diseases—Effects on individual and on society—Syphilis and its transmission—Protective measures—Symptoms and stages—Gonorrhea and other diseases. 40 pages

Heavy paper covers *25 cents per copy*
Complete set of five in special filing case, $1.00
AMERICAN MEDICAL ASSOCIATION
535 North Dearborn Street Chicago

OLD DOGS and NEW TRICKS

(Continued from page 152)

The experiments were to be used to explain other than the simple learning reactions of normal individuals. Sometimes during the training of inhibition the keen eyes of Pavlov noticed that the animal was less alert and might even go to sleep. There was something new in this. And if the dog was repeatedly subjected to various unfamiliar stimuli without any accompanying feeding, it would soon cease to pay any attention to the new novelty, which had at first excited its curiosity. This was another kind of inhibition, and soon the dog would be bored and sleepy no matter how noisy the stimulus, even as the city lodger sleeps beneath the roar of the elevated train when his country cousin does not. Dogs deprived of their higher brain centers would not act this way. They kept right on being curious each time something was presented to them. The experiments grew more and more complicated until sleeping and waking were explained as mere brain states of excitation and inhibition, supplanting one another, with part of the brain asleep even in waking hours.

But there were other dogs, who instead of sleeping were very excitable, yelped and pawed constantly, responded to any light or bell. They behaved rather as insane men and women do. What had happened to them? They had been taught that a circle of light meant food but an ellipse of light meant no food. Slowly but steadily Pavlov narrowed the circle until it took on more and more the shape of an ellipse. And finally the dog couldn't tell the difference. The problem was too hard for it; its stop and go signals had collided and it became a nervous, irritable and "insane" dog.

Sometimes in these states of "nervous breakdown" the animals, instead of running about their cages in a state of excitement, just lay in the corner and sulked. This time the conflict of excitation and inhibition led to the inhibitory reactions getting the upper hand, and the dog was depressed. Even so, men or women confronted with too many conflicting emotional strains, worries or shocks may become maniacal or depressed, neurotic or even insane.

But the dogs were not all alike. They seemed to fit into two groups: One group consisted of shrinking,

IT'S no trick at all for babies to smile, if their round little stomachs are at peace with the world. But it's terribly hard if their food doesn't *agree* with them.

Do you know why so many doctors nowadays prescribe Carnation Milk formulas? It is simply because this milk *does* agree with most babies. It forms curds as soft and flaky as those of mothers' milk. That makes the formula readily digestible—and *that's* what makes babies contented!

Carnation Milk supplies *all* the food elements of rich whole milk. And it is *extra* rich in bone-building "sunshine" vitamin D—because it is "irradiated." Every drop passes through ultra-violet rays like those of natural sunlight.

The Council on Foods of the American Medical Association grants its seal of acceptance to Irradiated Carnation Milk. Noted medical authorities approve its use, not only for feeding tiny babies, but as an ideal milk for growing children—and all the family.

Your doctor, we are sure, will gladly discuss with you the desirability of putting your baby on a Carnation formula. And we shall be happy to send a very interesting booklet, "The Contented Baby," which tells many things that you should know about this pure, nourishing, *modern* milk.... *Carnation Company, 701A Gas Light Bldg., Milwaukee, Wis.*

IRRADIATED Carnation MILK

"From Contented Cows"

YOUR BABY
DESERVES THE BEST
57
LOOK FOR
THESE TWO SEALS. THEY
MEAN PROTECTION FOR BABY
ACCEPTED
NOTHING is too good for the lord and master of the house—your baby! Serve him foods of the same high quality you enjoy—Heinz Strained Foods. They're cooked with dry steam and packed under vacuum to preserve flavor, color, vitamins, and minerals. And Heinz uses only the world's choicest fruits, vegetables, meats, and cereals. Make sure you're giving baby the best by ordering an assortment of Heinz 12 Strained Foods!
HEINZ
VEGETABLE SOUP
HEINZ
STRAINED FOODS

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cowardly animals, a weaker type, easily upset, in which positive reactions were hard to establish but inhibitory ones were easily fixed; the other group consisted of curious, alert, aggressive dogs, easily trained to react positively but not readily controlled by inhibitory reactions. This supposed "temperament" in dogs was the subject of a lively debate, as were many of Pavlov's experiments. In earlier years his fellow Russian scientists had scorned his research and scoffed at his "trained animals"; and even eight years after he had been granted the Nobel prize his close friend begged him to drop "that fad and return to real physiology."

Tenaciously Pavlov clung to his dogs. If he could not repeat his experiments he was perfectly willing to say he had been wrong, for even by the same trial and error methods with which he trained his animals, he learned himself. When he died at the age of 86 his thoughts were centered on what future experiments would reveal. He was confident that they would bring untold happiness to all by revealing the how and the why of human behavior.

But how far this will be true, time alone will tell. Dr. J. B. Watson, the leader of the American school of behaviorists, has carried the dog experiments right into every American home. Assuming that the child differs from the dog largely in that the former has few innate reactions, Watson and his followers have insisted that the early years of training are the most important. No longer is the infant allowed to grow up by chance. He is supposedly born with a reflex to grasp and hold on to anything that comes within reach, to suck and to show signs of fear if support is suddenly taken away. With this equipment he has to learn what to avoid and what to accept. And, according to American child specialists, by the same series of conditionings and reconditionings that Pavlov demonstrated in his dogs is the infant developed into an adult. By making the conditioning as pleasant as possible the learning processes are supposedly enhanced. By substituting a pleasant for an unpleasant stimulus an old reaction can be changed. These are the principles behind the newer methods of child training, and even as Pavlov himself said, by means of them we may come to enjoy freedom of will and complete mastery over our actions.

● Peas, beans, carrots, spinach, tomatoes, fruits—no matter which—the Foley Food Mill will make of them a fine pulped food for either the diet of the baby or the smooth diet of the adult. Certainly a big $1.25 worth. You can order direct from advertisement on page 188.

● Whether your occupation is one in which you "just sit and think" or sometimes "just sit," it's a big help to sit correctly and comfortably. The new Posture Chair by Harter Company can make a great difference. You just feel the gentle invitation to correct posture the moment you sit in one of them. The Harter Company will be glad to give you detailed information. See page 184.

● What's in a dish of Post's Bran Flakes and milk? First of all, a lot of appetite-appeal. But, your appreciation can be increased considerably by knowing the food has some unique nutritional values. You will find them presented in an attractive manner on page 102.

● When Mother sits down to sew . . . when Junior starts on his homework . . . when Father relaxes to read the evening paper . . . when company is present and you start a friendly game of bridge, what is more important than a fine, strong yet soft and glareless source of illumination? One certain way to obtain it is to own an I. E. S. Better Sight Lamp as shown in Westinghouse announcement, page 186. You will find it worth while to send for a copy of their booklet, "Seeing Is Believing."

● If you relish the flavor of fully ripened pineapple, then you will appreciate having a copy of the booklet, "Morning, Noon and Night," which is being sent out complimentary by the Hawaiian Pineapple Company. You will discover some new and perhaps surprising ways to incorporate pineapple and pineapple juice into practical and tempting recipes. See ad on page 100.

● "Training the Baby" is a booklet which thousands of mothers have found helpful. It is offered without cost by the Juvenile Wood Products, in their announcement of "The Little Toidey," on page 180. If "The Little Toidey" is not on sale at your local store, write direct to the company.

● Why do so many physicians prescribe Carnation Evaporated Milk for infant feeding formulas? You will find some of the important reasons on page 189, but it will be worth your while to investigate the subject still further by sending for the interesting Carnation booklet, "The Contented Baby"—it's free.

● If you are uncertain as to which cosmetics are safe and desirable, why not choose a brand that is widely prescribed by physicians for patients who have sensitive skins, or are known to be allergic to irritants sometimes found in ordinary cosmetics? You will find the announcement of these cosmetics on page 180. Also, a most generous offer, enabling you to try the Marcelle Face Powder and Face Creams at negligible cost.

"I'M NOT AFRAID OF CANCER!" (Continued from page 174)

ticking stops we are aware. As Dean Stanley whispered on his deathbed, life looks different from a horizontal position.

Another phone call! On an April night also, a night beautiful enough to melt one's heart out, I lifted the phone with trembling hands. The doctor's words have burned themselves forever into my brain. "Listen to this telegram!" he was shouting, as I found he always did when he was excited. "Are you listening? 'Most unusual. But definitely not malignant. No further operation necessary. No danger of recurrence.'"

Miracle of miracles! And would you believe it? I didn't even faint then!

Lovely days came again, and once more I danced the varsity drag with the others. I began to wear *his* pin, sweet prelude to the ring. My world was lovely now, and only a few weeks previously it had fallen to pieces.

I came across the poignant lines of Robert Louis Stevenson, who had waged such a gallant battle with tuberculosis on his island home in the Pacific: "To have suffered, nay, to suffer, sets a keen edge on what remains of the agreeable. This is a great truth and has to be learned in the fire." If I had read his words two months before, they would have meant nothing to me. I had never suffered. Now they expressed exactly my new philosophy of life.

There is the story of St. Francis of Assisi, who first realized the significance of life when he was seriously ill in his young manhood. During his illness he wrote his song of love and praise, "The Canticle of the Sun." Brother Sun, Sister Moon and Brother Wind seem infinitely dearer to the one who has walked on the brink of eternity.

My fears had dissolved like the remnants of snow in April. Once more I became attentive in classes. The dark vales of mental anguish seemed a long way off from the lovely green pastures I had come to. I once heard Alexander Woollcott describe a person as being as normal as the whole hockey team of a girl's school. That's a pretty fine simile and a pretty grand state of well being. That's how I felt.

The college year ended. I went home and loafed, and the reaction set in. I began to get silly notions again. Suppose the doctor didn't get all the tumor, the incision was so little! Suppose this, and suppose that! Toward the end of the summer I went to New York for the first time in my life to see a man who, I had heard, was the ace of breast cancer surgeons in the city.

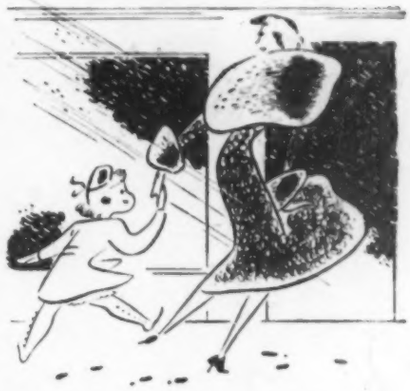
He was an angel. He told me that the great Dr. Smith was his friend and that he would stake his life on an opinion that man would hand down. I watched, fascinated, while his eyes closed, his long, sensitive, white fingers moved gently and searchingly over every inch of my breasts.

When the examination was finished, he slapped my chest hard. "I would pronounce you a good risk for a million dollars of insurance," he said. "I want you to go back to your senior year at college and make it the best year of the four. You have been on the road to neurasthenia. Within four weeks' time I want you to write me a letter and tell me that you have stopped thinking about this past-and-gone affair and are no longer afraid of the future. Life can be very beautiful for those who will put forth a little effort to make it that way. I have just one other prescription. Tonight I want you to go to see a grand new show in town called 'Show Boat.'"

In September I mailed him a gay letter. I had found myself "for keeps." Suddenly and mysteriously, my frail craft had steadied itself for stormy weather. The episode I have related was only the beginning of a series of misfortunes and disasters. But then, the years from 1929 to 1934 were none too pleasant for anybody anywhere, and I know that many others besides myself learned then that all kinds of adversity can be made big or little by the eyes with which we see. Paul prayed to be eased from buffetings of the flesh, and Christ answered him, "My grace is sufficient for thee; for power is made perfect in infirmity."

There has been no recurrence of the tumor. I know there never will be. I wish I could spread on all the winds this message: Don't wait! Don't wait! If any similar experience befalls you, have something done immediately. Don't be afraid. Remember how wretched I made myself, throwing away tons of precious nervous energy on fear. Even malignancy isn't frightening if you take the tumor in its early stages and have the best surgeon you possibly can. My experience was with a breast tumor, but every one nowadays has read about or heard about the first warnings of cancer in other parts of the body. If ever *you* detect such symptoms, don't wait! Oh, don't wait! For if you act quickly and intelligently, instead of locking the secret twenty layers down in your own heart, then, in the words of the Beloved Apostle: "Let not your heart be troubled, nor let it be afraid."

SODA-FOUNTAIN



Chase Chill

WITH BOVRIL

When out in damp, cold, blustery weather, there's nothing like a cheery cup of BOVRIL. Steaming-hot, it chases chill, combats the feeling of fatigue—warms and invigorates .... To say nothing of its pure deliciousness as a taste-intriguing, appetite-satisfying food-beverage.

Drop in at any good fountain and get acquainted with this pleasing, stimulating drink which has been *Great Britain's Great Bracer* for more than 50 years. Then have it at home, too. A teaspoonful, instantly dissolved in boiling water, makes an extra-good cupful. Take it at or between meals.

BOVRIL is formulated to provide a part of the nutritious beef proteins. From 20 to 30 pounds of prime, lean beef are required to produce one pound of the extract used in making BOVRIL concentrate. Easily assimilated. Good for children, grown-ups, old folks, invalids and convalescents.

At food and drug-stores, by the jar for home and sick-room use. At fountains and lunch counters, by the hot cup—10 cents. BOVRIL OF AMERICA, INC., Camden, N. J.

"BEVERAGE BEEFSTEAK"

BOVRIL

ALSO BOVRIL BEEF BOUILLON CUBES

"Don't you find that the Doctor's 'No Coffee' advice is pretty hard to follow?" "No indeed! But it would have been hard sledding if he hadn't said 'Drink Postum instead'"

PERHAPS YOU ARE ONE

of those people who "just couldn't bear the thought of giving up coffee."

Yet "giving up coffee" may be the very thing your doctor would advise...for, while many people can drink coffee without ill effects, a great many others should *never touch it!*

The solution to this problem is really easy...when your doctor adds, "Drink Postum instead!" ...as so many doctors *do.*

For Postum's steaming aroma, warm and tempting, and its rich, delicious flavor, full-bodied and satisfying, soon make the most rabid coffee-lover forget all about forbidden beverages.

And—best of all—Postum contains no caffein, no stimulant of any kind. It is simply whole wheat and bran, roasted and slightly sweetened.

Postum comes in two forms, Postum Cereal, the kind you boil or percolate, and Instant Postum, made instantly in the cup. Either way, you will find it delicious, easy to make, and very economical. Postum is a product of General Foods.

HEALTHGRAMS

From Articles in This Issue

¶The sooner the dangers of overeating and underexercising are realized by everybody in this country, the sooner will the advancing frequency of diabetes be checked. *See page 129*

¶There is only one safe protection against trichinosis: thorough cooking of the pork. *See page 130*

¶Chronic arthritis is regarded by the medical profession as a systemic disease with joint manifestations, by which is meant that the disease affects the entire body, but the most noticeable effects are found in the joints of the body. *See page 106*

¶It is when our energy machine breaks down that we become impressed with our dependence on its right working. *See page 141*

¶If possible apply first aid splinting to fractures before moving the patient at all; every move without splinting may cause irreparable further damage to the limb. *See page 145*

¶While the statistics of heart disease may send shivers down our spines, we really should congratulate ourselves that our span of life gives us a chance to live to that period at which heart disease sometimes develops. *See page 116*

¶Adequate lighting is not only a humane step toward the conservation of eyesight but is good business for industrialists. *See page 125*

¶Money is what we live *by;* it should never be what we live—or love—*for.* *See page 122*

¶Snoring indicates disturbances in the breathing apparatus, especially obstruction in the nose that prevents one from sleeping with the mouth closed. *See page 148*

¶If there is any moral advice that can be given for protection against the quacks, it is "Be skeptical!" *See page 113*

¶Connections are made between two points in the nervous system, much as in an electrical switch, and once joined they will connect regularly when proper conditions are present. *See page 150*

¶Early signs of cancer are the following: a lump that grows, a sore that fails to heal or heals and comes back again and again in the same place, or any abnormal discharge or bleeding from the body. *See page 168*